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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R2-ES-2021-0013; FF09E21000 FXES11110900000 234]

RIN 1018–BE44

Endangered and Threatened Wildlife and Plants; Threatened Species Status with Section 4(d) Rule for Bracted Twistflower and Designation of Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine threatened species status under the Endangered Species Act of 1973 (Act), as amended, for the bracted twistflower (*Streptanthus bracteatus*), a plant species from Texas. In addition, we designate critical habitat for the bracted twistflower. In total, approximately 1,596 acres (646 hectares) in Uvalde, Medina, Bexar, and Travis Counties, Texas, fall within the boundaries of the critical habitat designation. This rule applies the protections of the Act to this species and its designated critical habitat. We also finalize a rule issued under the authority of section 4(d) of the Act (a "4(d) rule") that provides measures that are necessary and advisable to provide for the conservation of this species.

DATES: This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: This final rule is available on the internet at *https://www.regulations.gov*. Comments and materials we received, as well as supporting documentation we used in preparing this rule, are available for public inspection at *https://www.regulations.gov* at

Docket No. FWS-R2-ES-2021-0013.

For the critical habitat designation, the coordinates or plot points or both from which the maps are generated are included in the decision file and are available at *https://www.regulations.gov* at Docket No. FWS-R2-ES-2021-0013. Any additional tools or supporting information that we developed for this critical habitat designation will also be available on the Service's website, at *https://www.regulations.gov*, or both.

FOR FURTHER INFORMATION CONTACT: Karen Myers, Field Supervisor, U.S. Fish and Wildlife Service, Austin Ecological Services Field Office, 1505 Ferguson Lane, Austin, Texas; telephone 512–927–3500. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species warrants listing if it meets the definition of an endangered species (in danger of extinction throughout all or a significant portion of its range) or a threatened species (likely to become endangered in the foreseeable future throughout all or a significant portion of its range). If we determine that a species warrants listing, we must list the species promptly and designate the species' critical habitat to the maximum extent prudent and determinable. We have determined that the bracted twistflower meets the Act's definition of a threatened species; therefore, we are listing it as such and designating critical habitat. Both listing a species as an endangered or threatened species and designating critical habitat can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process.

What this document does. This rule makes final the listing of the bracted twistflower as a threatened species with a 4(d) rule and designates critical habitat for the species under the Act. We are designating critical habitat for the species in three units totaling 1,596 acres (646 hectares) in Uvalde, Medina, Bexar, and Travis Counties in Texas. This rule adds the bracted twistflower to the List of Endangered and Threatened Plants in title 50 of the Code of Federal Regulations (CFR) at 50 CFR 17.12(h), adds a 4(d) rule to 50 CFR 17.73, and adds critical habitat for this species to 50 CFR 17.96(a).

The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species because of any of 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. We have determined that the primary threats to the bracted twistflower are loss of habitat due to urban and residential development, changes in structure and composition of vegetation and wildfire frequency, and herbivory by dense populations of white-tailed deer (*Odocoileus virginianus*) and introduced ungulates.

Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary) to designate critical habitat concurrent with listing to the maximum extent prudent and determinable. Section 3(5)(A) of the Act defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4(b)(2) of the Act states that the Secretary must make the designation

on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impacts of specifying any particular area as critical habitat.

Previous Federal Actions

Please refer to the proposed listing and critical habitat rule (86 FR 62668; November 10, 2021) for a detailed description of previous Federal actions concerning the bracted twistflower.

Summary of Changes from the Proposed Rule

Based on review of survey data and comments received from the City of Austin, we have revised the critical habitat boundary in Subunit 1d to remove the proposed eastern and southern polygons, resulting in a reduction of 10.45 acres (ac) (4.23 hectares (ha)) from the proposed critical habitat designation. Although there was a historical record of bracted twistflower plants within these areas, individuals have not been documented since 1989, despite regular surveying. Therefore, the Service has determined that these polygons are unoccupied and do not meet the definition of occupied critical habitat. Additionally, these areas are not essential for the conservation of the species and, accordingly, should not be designated as unoccupied critical habitat.

Based on a public comment, we revised the species status assessment (SSA) report to include the harmonic mean for those sites for which we have adequate data.

Based on new information we received, in this final rule, we acknowledge that the Balcones Canyonlands Preserve critical habitat units are jointly managed by the Parks and Recreation Department and Austin Water's Wildland Conservation Division, and the City of Austin now owns Bright Leaf Preserve. Additionally, we will update the SSA report to include the new group of bracted twistflower plants that was found at Valburn/Bull Creek District Park in 2020 when we receive the revised data.

Peer Review

A species status assessment (SSA) team prepared an SSA report for the bracted twistflower (Service 2021, entire). The SSA team was composed of Service biologists, in consultation with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species. In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought the expert opinions of six appropriate specialists regarding the SSA. We received one response. We also sent the SSA report to four partners, including scientists with expertise in local plant species, for review. We received review from all four partners (Texas Parks and Wildlife Department, the City of Austin, the City of San Antonio, and Joint Base San Antonio). The peer reviews can be found at *https://www.regulations.* In preparing the proposed rule, we incorporated the results of these reviews, as appropriate, into the SSA report, which was the foundation for the proposed rule and this final rule. A summary of the peer review comments and our responses can be found in the **Summary of Comments and Recommendations** below.

I. Final Listing Determination

Background

Bracted twistflower is an annual herbaceous plant in the mustard family (Brassicaceae) that occurs only along the southeastern edge of the Edwards Plateau of central Texas. There are currently 35 described species of *Streptanthus*. Bracted twistflower can be distinguished from most other members of this genus because the leaves borne on the flower stalk lack stems and all flower stems have a small, modified leaf, called a bract, at their bases.

Bracted twistflower habitats occur near the boundary between the Edwards or Devils River limestone formations and the Glen Rose limestone formation. Individual plants commonly occur near or under a canopy of Ashe juniper (*Juniperus ashei*), Texas live oak (*Quercus fusiformis*), Texas mountain laurel (*Sophora secundiflora*), Texas red oak (*Quercus buckleyi*), or other trees.

The seeds germinate in response to fall and winter rainfall, forming basal rosettes, and the flower stalks emerge the following spring bearing showy, lavender-purple flowers. The seed capsules remain attached to the stalks during the summer as they mature and dehisce, releasing the seeds to be dispersed by gravity. The foliage withers as the fruits mature, and the plants die during the heat of summer. This species is primarily an outcrossing species; the leafcutter bee *Megachile comata* (family: Megachilidae) is known to be an effective pollinator. Because the seeds of bracted twistflower do not disperse far, gene flow for this species occurs mainly through pollination.

Since 1989, populations of the bracted twistflower have been documented at 17 naturally occurring element occurrences (EOs) in five counties, as well as one experimental trial in Travis County (see table 1, below). We have adopted the EO standard to maintain consistency with the Texas Parks and Wildlife Department's Natural Diversity Database (TXNDD) and because the EOs used in the TXNDD are practical approximations of populations, based on the best available scientific information. Each EO may consist of one to many "source features," which are specific locations where one or more individuals have been observed one or more times.

Bracted twistflower is an annual plant, and the numbers of individuals that germinate at the source features of each EO vary widely from year to year in response to weather patterns or other stimuli. Thus, the numbers observed in any single year are not useful measures of population size because they do not reveal the numbers of live, dormant seeds that persist in the soil seed reserve. The SSA report (Service 2021,

appendix A) describes the method we used to estimate the potential population sizes of EOs, which we define as the largest numbers of individuals that have been observed at each source feature of each EO. We then used aerial imagery to determine whether the habitat of any source features had been destroyed by construction of roads, buildings, or other disturbance, and we calculated the estimated remaining potential population at each EO. For a complete description of the analysis used, see the SSA report (available at *https://www.regulations.gov* at Docket No. FWS-R2-ES-2021-0013). Table 1, below, lists the total potential populations of each EO and the proportions of each that were reported from source features that were destroyed, partially destroyed, or are still intact. In summary, within the naturally occurring EOs, we determined that habitats and potential populations are completely intact at 11 EOs, partially destroyed at 4 EOs, and completely destroyed at 2 EOs. However, even where habitats are intact, populations may decline due to ungulate herbivory, juniper competition, or other factors. A thorough review of the taxonomy, life history, and ecology of the bracted twistflower is presented in the SSA report (Service 2021, entire).

Table 1—Bracted twistflower element occurrences (EOs), potential population sizes (numbers of individuals), and habitat statuses of source features

EO—Site Name; Owner; Representation Area[1]	Total Potential Population of All Source Features	Potential Population by Habitat Status:			Percent Remaining Intact
		Intact	Destroyed	Partially Destroyed	
2—Cat Mountain (Far West); Private; NE	866	123	112	631	14.2
7—Ullrich Water Treatment Plant (Bee Creek Preserve/Balcones Canyonlands Preserve (BCP)); City of Austin; NE	493	493	0	0	100.0
9—Mt. Bonnell/Mt. Bonnell City Park/BCP; Private/City of Austin; NE	919	237	433	249	25.8
17—Barton Creek Wilderness Park; City of Austin (BCP); NE	1,677	1,677	0	0	100.0
21—Mesa-FM 2222; Private; NE	330	0	70	260	0.0
26—Bright Leaf State Natural Area (SNA); City of Austin; NE	10	10	0	0	100.0
32—Rough Hollow Ranch; Private; NE	40	0	40	0	0.0

33[2]**—**Vireo Preserve (experimental reintroduction); City of Austin (BCP); NE	120				
35—Valburn Drive/Bull Creek District Park; Private/City of Austin/BCP; NE	1,041	343	644	54	32.9
36—Gus Fruh/Barton Creek Greenbelt; City of Austin/BCP; NE	29	29	0	0	100.0
xx[3]**—**Falls Ranch; Private; NE	6	6	0	0	100.0
8—E Medina Lake; Texas Department of Transportation, Medina County, and private rights-of-way; C	2,260	477	481	1,302	21.1
18—Medina Lake; Private; C	1,254	1,254	0	0	100.0
23—Eisenhower City Park/Camp Bullis Military Training Reservation; City of San Antonio/Dept. of Defense; C	190	190	0	0	100.0
25—Laurel Canyon (Bear Bluff); Private Limited Partnership with City of San Antonio conservation easement; C	2,000	2,000	0	0	100.0
31—Rancho Diana (undeveloped natural area); City of San Antonio; C	958	958	0	0	100.0
10—Garner State Park; Texas Parks and Wildlife Department; W	686	686	0	0	100.0
24—Upper Long Canyon; Private; W	5	5	0	0	100.0

[1] Described under *Species Needs*, below. NE = northeast; C = central; W = west.
[2] This experimental reintroduction is not one of the 17 naturally occurring EOs.
[3] This newly discovered site does not yet have in EO ID or EO number in the TXNDD.

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and the implementing regulations in title 50 of the Code of Federal Regulations set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened species, and designating critical habitat for endangered and threatened species. In 2019, jointly with the National Marine Fisheries Service, the Service issued a final rule that revised the regulations in 50 CFR part 424 regarding how we add, remove, and reclassify endangered and threatened species and the criteria for designating listed species' critical habitat (84 FR 45020; August 27, 2019). On the same day, the Service also issued final regulations that, for species listed as threatened species after September 26, 2019, eliminated the Service's general protective regulations automatically applying

to threatened species the prohibitions that section 9 of the Act applies to endangered species (84 FR 44753; August 27, 2019).

The regulations that are in effect and therefore applicable to this final rule are 50 CFR part 424, as amended by (a) revisions that we issued jointly with the National Marine Fisheries Service in 2019 regarding both the listing, delisting, and reclassification of endangered and threatened species and the criteria for designating listed species' critical habitat (84 FR 45020; August 27, 2019); and (b) revisions that we issued in 2019 eliminating for species listed as threatened species are September 26, 2019, the Service's general protective regulations that had automatically applied to threatened species the prohibitions that section 9 of the Act applies to endangered species (84 FR 44753; August 27, 2019).

The Act defines an "endangered species" as a species that is in danger of extinction throughout all or a significant portion of its range, and a "threatened species" as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether any species is an endangered species or a threatened species because of any of the following 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.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these

actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term “threat” to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term “threat” includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term “threat” may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an “endangered species” or a “threatened species.” In determining whether a species meets either definition, we must evaluate all identified threats by considering the species' expected response and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species.” Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term “foreseeable future” extends only so far into the future as the Services

can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. "Reliable" does not mean "certain"; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

Analytical Framework

The SSA report documents the results of our comprehensive biological review of the best scientific and commercial data regarding the status of the species, including an assessment of the potential threats to the species. The SSA report does not represent our decision on whether the species should be listed as an endangered or threatened species under the Act. However, it does provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket No. FWS-R2-ES-2021-0013 on *https://www.regulations.gov*.

To assess the bracted twistflower's viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold

years), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We use this information to inform our regulatory decision.

Summary of Biological Status and Threats

In this discussion, we review the biological condition of the species and its resources, and the threats that influence the species' current and future condition, in order to assess the species' overall viability and the risks to that viability. We analyze these factors both individually and cumulatively to determine the current condition of the species and project the future condition of the species under several plausible future scenarios.

Species Needs

Habitat Availability and Protection from Herbivory

Bracted twistflower habitat occurs on karstic, porous limestones near the boundary of the Devils River or Edwards formations and Glen Rose formations in central Texas. These juniper-oak woodlands and shrublands experience hot, often dry summers and mild winters with bimodal (spring and fall) precipitation patterns. Optimal microsites for the bracted twistflower have less than 50 percent cover of woody plant canopy with the most robust plants growing in full sun (Fowler 2010, pp. 10–12; Leonard 2010, pp. 30–32; Ramsey 2010, pp. 10–13, 20; Leonard and Van Auken 2013, pp. 276–285). However, in areas with dense populations of white-tailed deer and other herbivores, few individuals survive except where they are protected from herbivory by a cover of dense, spiny understory vegetation (McNeal 1989, p. 17; Damude and Poole 1990, pp. 29–30; Poole et al. 2007, p. 470; Leonard 2010, p. 63).

Reproduction

Bracted twistflower is an annual species sustained through its reserve of seeds in the soil. Thus, resilient populations must produce more viable seeds than they lose through germination, herbivory, and loss of viability. Individuals that have begun flowering are vulnerable to herbivory by white-tailed deer, squirrels, and other herbivores, including introduced ungulates; although robust plants may generate a new flower stalk after the first stalk is removed, the loss of resources likely reduces reproductive output and decreases resiliency.

Bracted twistflower reproduces primarily by outcrossing between individuals that are not closely related; self-pollination produces only small amounts of seeds. Fertilization requires that two or more sexually compatible individuals are located within the forage range of native bee pollinators. The longevity of seed viability has not been determined, although at least some seeds remain viable in the soil for at least 7 years (Service 2021, p. 12). The known pollinators of bracted twistflower are leafcutter bees

(*Megachile* spp.) (Dieringer (1991, pp. 341–343), which have an estimated forage range of 600 meters (m) to 3 kilometers (km) (0.37 to 1.86 miles (mi)) (Mitchell 1936, pp. 124–125; Gathmann and Tscharntke 2002, pp. 760–761; Greenleaf et al. 2007, p. 593; Discover Life 2019); sweat bees (family *Halictidae*) may also be effective pollinators (Service 2021, p. 5), but due to their smaller size have correspondingly smaller forage ranges. Sexual reproduction also increases genetic diversity, and thus representation, which allows populations to be more likely to adapt and survive when confronted with new pathogens, competitors, and changing environmental conditions. For these reasons, successful reproduction likely requires clustering of genetically diverse individuals within habitats that also support leafcutter bees, sweat bees, and other native bee species.

Fall and winter rainfall stimulate bracted twistflower seed germination; successive rainfall events that allow soil moisture to persist may have greater effect than one or two heavy rains. In addition to rain, other factors appear to stimulate germination, such as the removal of competing vegetation, and possibly fire during a previous season.

Minimum Viable Population Size

Populations of bracted twistflower must be large enough to have a high probability of surviving for a prescribed period of time. For example, Mace and Lande (1991, p. 151) propose that species or populations be classified as vulnerable when the probability of persisting 100 years is less than 90 percent. This metric of population resilience is called minimum viable population (MVP). We adapted the method published in Pavlik (1996, p. 137) to estimate an MVP for bracted twistflower of about 1,800 individuals. This estimate of MVP is based only on numbers of mature, flowering individuals because juveniles that die before they reproduce do not contribute to the effective population size or future genetic diversity.

Risk Factors

A primary driver of the bracted twistflower's status is habitat loss due to urban and residential land development (McNeal 1989, p. 17; Damude and Poole 1990, p. 51; Zippin 1997, p. 229; Fowler 2010, p. 2; Pepper 2010, p. 5). A number of cities, including Austin, San Marcos, New Braunfels, and San Antonio, were established along the Balcones Escarpment due to the prevalence of springs. This area, known as the Interstate 35 corridor, is one of the fastest-growing urban complexes in the United States (TDC 2023, unpaginated). Urban development reduces the redundancy and representation of the bracted twistflower and has consumed all or most of the habitat at six EOs of the bracted twistflower.

Habitat changes leading to lower sunlight intensity in the existing habitat are another threat to the bracted twistflower as growth and reproduction of the species, and thus resilience, increases with higher light intensity and duration (Fowler 2010, pp. 1–18; Leonard 2010, pp. 1–86; Ramsey 2010, pp. 1–35; Leonard and Van Auken 2013, pp. 276–285). Bracted twistflower habitats have likely experienced a decline in the frequency of wildfire, which has allowed Ashe juniper and other woody plant cover to increase within most bracted twistflower populations (Bray 1904, pp. 14–15, 22–23; Fonteyn et al. 1988, p. 79; Fowler et al. 2012, pp. 1518–1521). These increases in woody plant cover reduce the growth and reproduction of bracted twistflower.

Excessive herbivory by white-tailed deer and introduced ungulates is a significant factor affecting the status of bracted twistflower throughout the species' range, except where populations are protected from deer by fencing or through intensive herd management (McNeal 1989, p. 17; Damude and Poole 1990, pp. 52–53; Dieringer 1991, p. 341; Zippin 1997, pp. 39–197, 227; Leonard 2010, pp. 36–43; Fowler 2014, pp. 17, 19). Herbivory is exacerbated by the extremely high deer densities in the Edwards Plateau of Texas (Zippin 1997, p. 227).

Both authorized and unauthorized recreation affects the species' survival at several protected natural areas, as well as on private lands. Hiking and mountain bike trails have impacted the populations at Mt. Bonnell City Park, Barton Creek Preserve, Garner State Park, and Bull Creek Park through trampling of the herbaceous vegetation and severe soil erosion where trails cut directly through occupied habitat (McNeal 1989, p. 19; Fowler 2010, p. 2; Bracted Twistflower Working Group 2010, p. 3; Pepper 2010, pp. 5, 15, 17).

Small, isolated populations are less resilient and more vulnerable to catastrophic losses caused by random fluctuations in recruitment or variations in rainfall or other environmental factors (Service 2016, p. 20). Small populations are also less able to overwhelm herbivores to ensure replenishment of the soil seed reserve (Service 2021, p. 33). In addition to population size, it is likely that population density also influences population viability, because reproduction requires genetically compatible individuals to be clustered within the forage range of the native bee pollinators (Service 2021, p. 33). Small, reproductively isolated populations are also more susceptible to the loss of genetic diversity, genetic drift, and inbreeding (Barrett and Kohn 1991, pp. 3−30). This may reduce the ability of the species or population to resist pathogens and parasites, adapt to changing environmental conditions, or colonize new habitats. More than half of the EOs observed since 1989 are at risk due to the demographic consequences of small population sizes (significantly below the estimated MVP level of 1,800 individuals), and many of the remaining populations have very little genetic diversity and relatively high levels of inbreeding (Pepper 2010, pp. 13, 15). The species as a whole still possesses significant genetic diversity (Pepper 2010, pp. 4, 11, 15), but several of the core reservoirs of the species' genetic diversity occur on private lands and may be lost to development.

Current Condition

Our assessment of the current species viability of bracted twistflower is based on its resiliency, redundancy, and representation. We ranked the current conditions of bracted twistflower EOs as high, medium, low, or extirpated based on the following characteristics: The resiliency (proportion of potential populations where habitat is intact, as described above); the population sizes and trends (if known) in remaining intact habitats; genetic diversity and inbreeding coefficients (if known); the current levels of monitoring, vegetation management, and protection from development, herbivores, and recreational impacts on the remaining intact habitats. We considered resiliency to be based upon the potential populations in intact habitats (see table 1), which is one of several components that contribute to current conditions. The current condition of each EO is based upon the cumulative effects of these factors.

Resiliency

Our review of the TXNDD EO records (TXNDD 2018a,b) indicates that relatively large pulses of bracted twistflower plants emerge in specific areas ("source features") during relatively few years, while during most years few or no plants emerge. This wide annual variation in germination makes it very difficult to determine the species' population sizes and demographic trends (Service 2021, pp. 22–23, appendix A). However, one indicator of the status of bracted twistflower populations is the condition of their habitats. We define potential population size as the maximum numbers observed in specific areas during "pulse" years, when optimal conditions stimulate the greatest amounts of seed germination, establishment, and survival to successful reproduction. Thus, our estimate of the species' status is based in part on the potential populations remaining in intact habitats. The potential total number of individuals at the 17 naturally occurring EOs observed since 1989 is 12,764 (not including 120 planted at the experimental population at EO 33).

Since 1989, 14 percent of bracted twistflower habitat (a potential population of 1,780 plants) has been completely destroyed in portions of 6 EOs; 19 percent of bracted twistflower habitat (a potential population of 2,496 plants) has been partially destroyed in portions of 5 EOs; and 67 percent (a potential population of 8,488 plants) remains intact in portions of 15 naturally occurring EOs (note that each EO can have intact, partially destroyed, and destroyed portions, so the total is greater than the number of EOs). Nevertheless, this estimate reflects only the losses due to habitat development and does not account for populations that may have declined due to excessive herbivory or juniper competition.

Only five of the remaining 17 naturally-occurring EOs are in high condition, with only four of the remaining 17 naturally-occurring EOs maintaining a potential intact population of at least 50 percent of the estimated MVP value of 1,800 individuals. These populations are Barton Creek Greenbelt and Wilderness Park (EO 17) and Rancho Diana (EO 31), which are protected natural areas managed by the City of Austin and City of San Antonio, respectively; Laurel Canyon (EO 25), which is protected from development and land use change through a City of San Antonio conservation easement; and a portion of Medina Lake (EO 18), which landowners voluntarily conserve. The City of Austin also protects 17.9 acres of habitat (EO 7) from development and land use change at the Ullrich Water Treatment Plant (Texas Parks and Wildlife Department 2018, p. 1), where there is a bracted twistflower population with a potential maximum population of about 27 percent of the estimated MVP level. Gus Fruh (EO 36) is small, but due to its proximity to EO 17 along Barton Creek, might be considered part of a Barton Creek metapopulation. Mt. Bonnell City Park (EO 9), Garner State Park (EO 10), Eisenhower City Park (EO 23), Valburn Drive/Bull Creek District Park (EO 35), and Falls Ranch (no EO number) are all currently far below the MVP level. Four EOs have been mostly lost to development: Cat Mountain (EO 2), East Medina (EO 8), Mt. Bonnell City Park, and

Valburn Drive/Bull Creek District Park. Two EOs have been completely lost to development: Mesa (EO 21) and Rough Hollow Ranch (EO 32). No individuals have been seen in recent years at two additional EOs, Bright Leaf SNA (EO 26) and Upper Long Canyon (EO 24), nor at the experimental population at Vireo Preserve (EO 33). In summary, none of the EOs of bracted twistflower have reached the MVP level in the last decade, most have low resiliency, many have gradually declined over the years that they have been monitored, and six EOs have been extirpated or very nearly extirpated.

Redundancy and Representation

Bracted twistflower currently possesses significant genetic diversity at the species level, but populations are genetically distinct and there is no gene flow between most populations (Pepper 2010, p. 11). However, of the 10 EOs assessed by Pepper, low levels of genetic diversity occurred in all or parts of 4 EOs (40 percent), and all or parts of 5 EOs (50 percent) had high levels of inbreeding; low genetic diversity and inbreeding were more prevalent in smaller, more isolated populations (Pepper 2010, pp. 13, 15). Therefore, although the species still possesses adequate genetic and ecological representation, many of its populations are at risk, due to small population sizes, low levels of genetic diversity, lack of gene flow, and inbreeding.

Representation areas are sectors of a species' geographic range where important constituents of the species' genetic and ecological diversity occur. The known EOs of bracted twistflower are clustered in three geographic areas separated from each other by 50 km (30 mi) or more. Slight differences in day length, solar elevation, temperature, and precipitation occur over the species' range from northeast to southwest. Austin has more moderate summer and winter temperatures, 40 percent fewer days of freezing weather, and 40 percent greater annual rainfall, compared to Uvalde County. These climate differences also create variation in the structure and composition of associated vegetation. Pepper (2010, pp. 4, 15) identified major, distinct clusters of genetic diversity in Medina

County and in the Austin area. Based on these genetic data and the geographic clustering of populations, we identified three representation areas in the northeastern, central, and western portions of the species' range (Service 2021, figure 9).

Two EOs are extirpated (EO 21 and EO 32), and five EOs have low condition ranks and negligible contributions to redundancy. The northeastern representation area has six EOs with high or medium condition ranks, conferring an intermediate degree of population redundancy within this area. The central representation area also has intermediate redundancy because it has four EOs with high- or medium-condition ranks. In the western representation area, only EO 10 has a medium condition rank, and no population pulses have been observed there in recent years. This representation area appears to have very low redundancy; however, few surveys have been conducted in that area, so undiscovered populations might still exist.

In summary, bracted twistflower has five EOs in high condition, with only four that are maintaining a potential population size of 50 percent of the MVP. Two representation areas have intermediate redundancy. Genetic representation at the species level is adequate, but 40 to 50 percent of EOs had low genetic diversity and high inbreeding and inbreeding also occurred in three larger populations. The species has lost all or parts of six EOs and one-third of its potential population size over the last 30 years.

Projections of the Species' Future Viability

The SSA projects viability during two future periods, from 2030 to 2040 and from 2050 to 2074. These timeframes represent the likely minimum and maximum lengths of time that seeds could remain viable in the soil, and therefore the potential of declining EOs to recover from viable seeds in the soil seed reserve. This timeframe also corresponds closely to climate projections and human population growth projections, a proxy for urban development (USGCRP 2017, entire; USGS 2019, unpaginated; TDC 2023, unpaginated). Although we do not know the maximum length of time that bracted

twistflower seeds can remain viable in the soil seed reserve, observations of the experimental population at Vireo Preserve reveal that at least some seeds are viable after 7 years. Nevertheless, we do not know the maximum length of time that bracted twistflower seeds may remain viable in the soil. Consequently, we used a surrogate species approach based on a long-term experiment on annual plant seed longevity in the soil which found that 60 percent of annual and biennial plant species still germinated after 15 years in the soil, but by 35 and 50 years, viable seeds persisted for only 30 percent and 25 percent of the species, respectively (Telewski and Zeevart 2002, pp. 1285–1288). Therefore, it is likely that soil seed reserves of bracted twistflower will remain viable at least 10 to 20 years and, if not replenished by new crops of seeds, will become depleted after 35 to 50 years.

The projections of future viability also considered three different scenarios representing an improvement over current conditions, continuation of current trends, or deterioration beyond current conditions. These scenarios were based on seven components that influence this species' status and their cumulative effects on the species: the extent of conservation support, effects of regional development, survey results, documentation of the geographic range, effectiveness of habitat management, effectiveness of population management, and effects of climate changes. Table 2, below, summarizes the projected species viability during each of the two timeframes and under each of the three scenarios. Under the "improvement" scenario, the number of EOs in high condition, currently 5, would increase to 10 by 2030–2040 and to 13 by 2050–2074, leading to an increase in species resiliency. In this scenario, species redundancy and representation remain stable. Under the "current trends continue" scenario, the number of extirpated EOs would increase to 4 by 2030–2040 and to 10 by 2050–2074, leading to a loss of redundancy. Both EOs in the western representation area would be extirpated by 2050–2074, leading to a reduction in species representation. Conditions within 14 EOs

would deteriorate under this scenario, leading to a reduction in species resiliency. The "deterioration" scenario projects extirpation of 11 and 15 EOs during these periods, respectively, leading to a significant reduction in species redundancy and representation. By 2050–2074, all EOs in the western representation area would be extirpated, with only two remaining in the northeastern representation area and one in the central representation area. Under this scenario, species resiliency declines across all sites. For more information, see the bracted twistflower SSA report (Service 2021, pp. 51–66).

These scenarios should not be interpreted as mutually exclusive. The components of the scenarios will interact independently; future viability will likely result from a combination of conditions analyzed in these scenarios. For example, conservation support and habitat management could be better than expected by 2050, but climate changes and regional growth could have more severe impacts than expected.

Table 2—Projected viabilities of bracted twistflower during two future timeframes and under three scenarios

EO Number	Current Condition Rank	Future Scenarios		
		Improvement	Current Trends Continue	Deterioration
		Period/ Rank	Period/Rank	Period/Rank
Northeastern Representation Area				
2	Low	2030–2040: Low	2030–2040: Low	2030–2040: Extirpated
		2050–2074: Medium	2050–2074: Extirpated	2050–2074: Extirpated
7	High	2030–2040: High	2030–2040: High	2030–2040: Low
		2050–2074: High	2050–2074: High	2050–2074: Low
9	Medium	2030–2040: High	2030–2040: Low	2030–2040: Extirpated
		2050–2074: High	2050–2074: Extirpated	2050–2074: Extirpated
17	High	2030–2040: High	2030–2040: High	2030–2040: Low
		2050–2074: High	2050–2074: Medium	2050–2074: Low
21	Extirpated	2030–2040: Extirpated	2030–2040: Extirpated	2030–2040: Extirpated
		2050–2074: Extirpated	2050–2074: Extirpated	2050–2074: Extirpated
26	Low	2030–2040: Medium	2030–2040: Extirpated	2030–2040: Extirpated
		2050–2074: Medium	2050–2074: Extirpated	2050–2074: Extirpated
32	Extirpated	2030–2040: Medium	2030–2040: Extirpated	2030–2040: Extirpated
		2050–2074: Medium	2050–2074: Extirpated	2050–2074: Extirpated
33	Low	2030–2040: Medium	2030–2040: Extirpated	2030–2040: Extirpated
		2050–2074: High	2050–2074: Extirpated	2050–2074: Extirpated
35	Medium	2030–2040: High	2030–2040: Low	2030–2040: Low
		2050–2074: High	2050–2074: Low	2050–2074: Extirpated
36	High	2030–2040: High	2030–2040: Medium	2030–2040: Low
		2050–2074: High	2050–2074: Low	2050–2074: Extirpated
xx[1]	Medium	2030–2040: Medium	2030–2040: Low	2030–2040: Extirpated
		2050–2074: High	2050–2074: Extirpated	2050–2074: Extirpated
Central Representation Area				
8	Low	2030–2040: Medium	2030–2040: Low	2030–2040: Extirpated
		2050–2074: Medium	2050–2074: Extirpated	2050–2074: Extirpated
18	Medium	2030–2040: High	2030–2040: Medium	2030–2040: Low

EO Number	Current Condition Rank	Future Scenarios		
		Improvement	Current Trends Continue	Deterioration
		Period/ Rank	Period/Rank	Period/Rank
		2050–2074: High	2050–2074: Low	2050–2074: Extirpated
23	Medium	2030–2040: High	2030–2040: Low	2030–2040: Extirpated
		2050–2074: High	2050–2074: Low	2050–2074: Extirpated
25	High	2030–2040: High	2030–2040: Medium	2030–2040: Low
		2050–2074: High	2050–2074: Low	2050–2074: Extirpated
31	High	2030–2040: High	2030–2040: High	2030–2040: Medium
		2050–2074: High	2050–2074: High	2050–2074: Low
Western Representation Area				
10	Medium	2030–2040: High	2030–2040: Low	2030–2040: Extirpated
		2050–2074: High	2050–2074: Extirpated	2050–2074: Extirpated
24	Low	2030–2040: Medium	2030–2040: Low	2030–2040: Extirpated
		2050–2074: High	2050–2074: Extirpated	2050–2074: Extirpated

[1] This newly discovered site does not yet have in EO ID or EO number in the TXNDD.

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on the species, but we have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the species. To assess the current and future condition of the species, we undertake an iterative analysis that encompasses and incorporates the threats individually and then accumulates and evaluates the effects of all the factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative effects analysis.

Conservation Efforts and Regulatory Mechanisms

The Bracted Twistflower Working Group, a consortium of Federal, State, and local agencies, researchers, and conservation organizations, has met informally at least annually since 2000, and has worked actively to promote the conservation and recovery of this species. The Service, Texas Parks and Wildlife Department (TPWD), the City of Austin, Travis County, the Lower Colorado River Authority, and the Lady Bird Johnson Wildflower Center established a voluntary memorandum of agreement to protect, monitor, and restore bracted twistflower and its habitats on Balcones Canyonlands

Preserve (BCP) tracts. Five extant EOs and one experimental population are protected through the agreement, including three of the five populations in a high current condition (see table 2, above). The City of San Antonio has actively protected and managed EOs at Eisenhower Park and Rancho Diana; the latter continues to be one of the largest remaining populations. The City of San Antonio and The Nature Conservancy own a conservation easement to protect 222 ha (549 ac) in Medina County for watershed conservation; this includes EO 25, which has one of the largest extant bracted twistflower populations (City of San Antonio and The Nature Conservancy, 2016). All or parts of 11 EOs are located on State or local conservation land.

Summary of Comments and Recommendations

In the proposed rule published on November 10, 2021 (86 FR 62668), we requested that all interested parties submit written comments on the proposal by January 10, 2022. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. Newspaper notices inviting general public comment were published in the Uvalde Leader, Austin American Statesman, and the San Antonio Express. We did not receive any requests for a public hearing.

Peer Reviewer Comments

As discussed in **Peer Review** above, we received comments from one peer reviewer. We reviewed all comments we received from the peer reviewer for substantive issues and new information regarding the information contained in the SSA report. The peer reviewer stated that the SSA is an outstanding compendium of what we know about this species. This reviewer provided additional information, clarifications, and suggestions to improve the final SSA report, which we adopted. They also provided the following substantive critique of our analyses of current and future conditions:

(1) Comment: The peer reviewer stated that our assessments of current and future viability of the Travis County populations in the northeastern representation area were too optimistic.

Our response: The final two paragraphs of the executive summary within the SSA report that was reviewed by the peer reviewer incorrectly stated the current conditions and projections of future viability and reported higher ranks for current conditions and all three future scenarios than our analyses actually determined. This error was corrected in the SSA report prior to the publication of the proposed rule (86 FR 62668; November 10, 2021). Sections 5 (Current Conditions) and 6 (Projections of Future Viability) of the SSA report that the peer reviewer reviewed did present the analyses correctly. The peer reviewer may also have misinterpreted our definition of the medium condition rank. We added information to the final SSA report to clarify the meaning of the medium condition rank.

Comments from States

(2) Comment: The Texas Parks and Wildlife Department (TPWD) commented that critical habitat on private lands could harm relationships with landowners and stated that the benefits of excluding critical habitat on private land without landowner support outweigh the benefits of designating the area as critical habitat.

Our response: When making a critical habitat designation, the Service is required to identify areas that are essential to the conservation of the species, regardless of land ownership. The areas being designated as critical habitat contain the necessary physical and biological features for the bracted twistflower and are essential to the conservation of the species into the future. The Service did not receive any comments from private landowners opposing the designation of critical habitat on their land. While we are not required to contact landowners when making critical habitat designations, we understand that cooperative conservation can be very successful. The Service supports voluntary

conservation through our Partners for Fish and Wildlife Program, which provides funding for habitat projects on private lands that benefit Federal trust species.

Public Comments

(3) Comment: The City of Austin requested an exclusion to a portion of proposed critical habitat Subunit 1d, which is adjacent to the Ullrich Water Treatment Plant, to allow for future infrastructure projects and proposed including additional adjacent lands to compensate for the exclusion. They also stated that they are unaware of any record of the species within the area for which they requested an exclusion.

Our response: Proposed Subunit 1d has confirmed records of bracted twistflower, including some records that may have been within the area requested for exclusion by the City of Austin (City of Austin 2016, pers. comm.; Fowler 2014, unpaginated; TXNDD 2018b, p. 3 unpaginated). However, based on this comment, we examined the survey data again and determined that plants were last documented in the easternmost polygon in 1989 with a geographic precision of plus-or-minus 164 ft (50 m). Due to the low precision, we cannot confirm whether this polygon was occupied, and the species has not been documented there since, despite regular monitoring. Additionally, we do not have any records of plants documented within the southernmost polygon. Therefore, we find that the best available information indicates that this area is no longer occupied. As a result, the area does not qualify as occupied under the first prong of the Act's definition of critical habitat. We then assessed whether these areas should be included under the second prong of the definition of critical habitat – areas that are not occupied at the time of listing but are essential to the conservation of the species. We determined that they are not essential for the conservation of the species because we are designating areas in all three representation areas, including areas that preserve the populations with the highest resiliency, and recovery of the species can be achieved by maximizing populations in occupied areas, see **Criteria Used to Identify Critical Habitat**. As a result, we revised

the boundaries of the final critical habitat designation to remove these portions of this unit. Because the area is no longer included in the critical habitat designation, the exclusion analysis for this area is not necessary.

Numerous recent occurrence records occur within the westernmost polygon in the Subunit 1d; therefore, we continue to conclude that this portion of the proposed subunit is occupied by the species (City of Austin 2016, pers. comm.; Fowler 2014, unpaginated; TXNDD 2018b, unpaginated). We considered the City of Austin's request for exclusion for this area. The economic analysis did not identify significant costs related to critical habitat, and the City of Austin did not provide adequate economic information regarding any of the activities identified. The City of Austin also did not provide information or a reasoned rationale supporting their requests for exclusion, which is necessary for the Service to engage in an exclusion analysis. Critical habitat does not restrict access to property. Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. Because the areas we are designating as critical habitat in this rule are considered occupied, the majority of costs are not associated with the critical habitat designation but with the listing of the species as threatened.

(4) Comment: The City of Austin proposed to add additional areas to our critical habitat designation within the Balcones Canyonland Preserve adjacent to the Ullrich Water Treatment Plant.

Our response: When developing our critical habitat proposal, we relied on a model of the habitat needs of the species to determine the boundaries of the proposed units. The areas the City of Austin proposed to add to the critical habitat designation are outside the known soil formation, slope, and elevational range of known occupied sites in the area. Additionally, these areas are currently unoccupied, and we do not know if they

would be able to become occupied in the future. Therefore, we conclude that these areas are not essential to the conservation of bracted twistflower, and we are not amending our designation to include them.

(5) Comment: One commenter stated that juniper encroachment is not a threat to the bracted twistflower and that the removal of juniper and prescribed burning would be detrimental to the species.

Our response: Our assessment that juniper encroachment and changes in wildfire frequency threaten bracted twistflower is based on scientific data and observations. Two assessments (McNeal 1989, p. 17; Damude and Poole 1990, pp. 29, 30, 46) observed that bracted twistflower plants can occur under dense shrub cover due to severe herbivory, but are larger, more vigorous, and reproduce more in the open, suggesting that open woodlands are preferred habitats. Two master's theses (Ramsey 2010, p. 20; Leonard 2010, p. 63), the final report of a section 6-funded research project (Fowler 2010, pp. 9–12), and two peer-reviewed scientific publications (Fowler et al. 2012, pp. 1516–1521; Leonard and Van Auken 2013, pp. 282–284) documented increased growth and reproductive output for individuals that are exposed to direct sunlight at least part of the day, when deer herbivory is prevented. These authors concluded that dense brush may serve as a refugium from herbivory, but it is not the species' optimal habitat. These conclusions are further supported by the species' positive response to deer-fencing and brush thinning conducted by the City of San Antonio at Rancho Diana Natural Area. Furthermore, two of the largest populations, Laurel Canyon and Rancho Diana, occur in relatively open vegetation of low shrubs, where there is little or no juniper cover. This body of research provides evidence that the bracted twistflower is best adapted to the edges and canopy gaps of juniper-oak woodlands that were historically maintained by periodic wildfires. We emphasize that listing bracted twistflower as a threatened species

and the designation of its critical habitat do not require landowners, including the City of Austin, to manage the species' habitats in a particular way.

(6) Comment: One commenter stated that the SSA report for the bracted twistflower was overly optimistic in current and future conditions and the species should be listed as endangered rather than threatened. However, no new information was provided.

Our response: The fundamental difference between an endangered and a threatened species is the time horizon at which the species becomes in danger of extinction. An endangered species is currently at risk of extinction, while a threatened species is likely to become at risk of extinction in the foreseeable future. The bracted twistflower currently occurs primarily on protected natural areas. While some populations have declined or have not been recently monitored, others are currently stable and likely to maintain stable or increasing populations into the foreseeable future provided that their habitats are effectively managed. Additionally, as an annual plant, effective management and restoration can boost population sizes within a relatively short timeframe. One of the primary threats to the species is urban and residential development. This threat is not anticipated to affect the species within the protected natural areas since these areas are protected from development. Other threats, such as ungulate herbivory and juniper encroachment, could cause populations on protected sites to decline, if they are not effectively managed. The SSA report (Service 2021, p. 53) projects that such declines could occur as soon as 2030 to 2040 under the "current trends continue" scenario. Therefore, the Service has determined that this species is not currently in danger of extinction, but it is likely to become so within the foreseeable future without the protections of the Act. A more complete discussion of our finding and rationale can be found under **Determination of Bracted Twistflower's Status**, below.

(7) Comment: Two commenters stated that the bracted twistflower is endangered within a significant portion of its range. Specifically, the commenters were concerned with the western and northeastern representation areas.

Our response: In order for a species to be listed due to its status within a significant portion of its range, the species must have a different status in that portion and that portion must also be significant. Although several bracted twistflower populations in the northeastern representation area have been destroyed or damaged by development, five populations are on protected natural areas, including two relatively large populations at Barton Creek and Ullrich. The City of Austin's annual monitoring data from 2012 through 2018 (City of Austin 2018, entire) indicate wide annual variation in the numbers of individuals that germinate and flower, but no detectable trends occurred over this timeframe. For this reason, we determined that the populations within this portion of the range are not currently in danger of extinction and therefore have the same status as the species rangewide. A significant portion of the range under the Act is not necessarily equivalent to representation areas used in SSAs to describe a species' condition. The SSA placed the two Uvalde County populations in the western representation area due to their physical separation from the central populations. However, these Uvalde County populations constitute the western-most periphery of the species' range, rather than a significant portion of the range. Furthermore, the Garner State Park population has been monitored very infrequently, and the other population, on private land, was last observed in 1997. Consequently, we have no information upon which to judge the current status of these populations and therefore cannot conclude that they have a different status from the remainder of the range.

(8) Comment: One commenter recommended that we designate unoccupied critical habitat for the species and suggested Vireo Preserve as a potential location.

Our response: In order to designate critical habitat in areas not occupied by the species at the time of listing, the Service must determine that the area is essential to the conservation of the species. During our analysis, we determined that the occupied areas we are designating are adequate to ensure the conservation of the species and that designating unoccupied areas as critical habitat was not essential for the conservation of the species. Additionally, we have concerns about the ability of the Vireo Preserve to support the species. Bracted twistflower had been introduced within the Vireo Preserve in the past and did not survive due to high levels of herbivory from white-tailed deer and introduced ungulates. Because we determined that Vireo Preserve is not essential to the conservation of the species, we are not designating it as unoccupied critical habitat.

(9) Comment: One commenter recommended that the Service include rights-of-way within Medina County as critical habitat.

Our response: We are not designating critical habitats in areas that lack natural vegetation, such as roads and buildings, because we determined that they do not contain the essential physical and biological features due to development or significant disturbance. Although the species has been found along highway and road rights-of-way in Medina County, due to frequent soil disturbance and the displacement of native vegetation by introduced, invasive grasses, such as bermudagrass (*Cynodon dactylon*) and King Ranch bluestem (*Bothriochloa ischaemum*), these are not the areas where we would emphasize recovery of the species.

(10) Comment: One commenter stated that, although our estimates of potential populations are probably the best available method, our evaluation overestimated resiliency and underestimated the potential extirpation of individual populations. Worsening conditions within many sites, due to deer browsing, trampling, and more, have resulted in declining population sizes and exhaustion of the persistent seed reserve. The commenter stated that, although the numbers in the proposed rule's table 2 (86 FR

62668, November 10, 2021, pp. 62675–62676) are correctly interpreted as site potentials, they are almost certainly overestimates of population sizes in the context of the resiliency analysis.

Our response: Estimates of potential populations are often larger than the numbers of flowering individuals seen in any given year. As an annual plant, bracted twistflower persists through its soil seed reserve. As the commenter noted, soil seed reserves decline if not replenished through successful reproduction. However, we have no data on this particular species' seed reserve capacity and limited data on seed longevity in the soil. The method we used is an empirical estimate of the seed reserve potential to generate reproductive individuals that is derived from the largest numbers of individuals observed in the extant portions of a population's habitat. We acknowledge the limitations of this method, but as noted, it is the best available scientific information.

(11) Comment: One commenter stated that population estimates used within the SSA report overestimate population sizes and suggested a better estimate would be based on harmonic means. This commenter also stated that genetically effective population sizes are the best measures of population sizes.

Our response: The harmonic mean, is a type of average (The American Heritage Dictionary 1982, p. 595), is a useful measure for highly variable population sizes. However, this approach requires a relatively large number of annual population censuses. We do not have enough population census data for most populations, and in other cases censuses were conducted only during peak years. In these cases, harmonic means are not very meaningful. The data required to calculate harmonic means exist for only for a few sites monitored annually by staffs of the City of Austin and City of San Antonio; we will include the harmonic means for those sites in future revisions to the SSA report.

Determination of Bracted Twistflower's Status

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines an "endangered species" as a species in danger of extinction throughout all or a significant portion of its range, and a "threatened species" as a species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether a species meets the definition of endangered species or threatened species because of any of the following 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.

Status Throughout All of Its Range

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats and the cumulative effect of the threats under the Act's section 4(a)(1) factors to the bracted twistflower.

Bracted twistflower occurs in three geographically separate representation areas, which experience differing regional climate and biotic factors. Although threats are currently acting on the bracted twistflower throughout its range, 11 EOs were found to be in high or medium r condition currently, and 11 EOs (including one experimental population) occur on protected, State-owned or locally owned conservation lands. Thus, after assessing the best available information, we conclude that the bracted twistflower is not currently in danger of extinction throughout all of its range. We, therefore, proceed with determining whether the bracted twistflower is likely to become endangered within the foreseeable future throughout all of its range.

For the purpose of this determination, the foreseeable future is 50 years. Based on the best available information, this is the period of time in which we can make a reliable prediction of the bracted twistflower's viability. These timeframes represent the likely minimum and maximum lengths of time that seeds could remain viable in the soil, and therefore the potential of declining EOs to recover from viable seeds in the soil seed reserve. This timeframe also corresponds closely to climate projections and human population growth projections, a proxy for urban development (USGCRP 2017, entire; USGS 2019, unpaginated; TDC 2023, unpaginated). In our projections of future viability, the best available information demonstrates that the time period during which we can reasonably expect that a population could recover from the soil seed reserve if managed appropriately is 10 to 20 years. The best available information further demonstrates that soil seed reserves would die out if not replenished in a 35- to 50-year timeframe. Accordingly, these two timeframes bracket the span of time during which populations will either be recovered or extirpated, and they indicate the period of time it is reasonable for us to make a reliable prediction as to the species' status in the foreseeable future.

Under the "current trends continue" scenario, the number of extirpated EOs increases from 2 to 10. Under the "deterioration" scenario, 15 EOs will become extirpated, and the condition rank of the remaining 3 EOs will be low. Development, which results in the permanent loss of habitat, is the most significant threat to the bracted twistflower, and this threat is expected to continue into the future. Habitats throughout the species' range have been degraded due to habitat modification and increased browsing pressure from white-tailed deer and introduced ungulates. Threats from habitat loss, habitat modification, increased herbivory, and loss of genetic diversity are cumulative and will likely result in further degradation without management intervention. Although genetic diversity is high within some populations, there is no appreciable gene flow between populations; this is likely to cause a loss of overall genetic diversity at the

population and species level over time (Pepper 2010, p. 11). Populations of bracted twistflower have declined and are expected to continue to decline into the future. Our analysis of the species' current and future conditions show that the population and habitat factors used to determine the resiliency, representation, and redundancy of bracted twistflower are likely to continue to decline to the degree that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in *Center for Biological Diversity* v. *Everson*, 2020 WL 437289 (D.D.C. Jan. 28, 2020) (*Everson*), vacated the aspect of the Final Policy on Interpretation of the Phrase "Significant Portion of Its Range" in the Endangered Species Act's Definitions of "Endangered Species" and "Threatened Species" (Final Policy; 79 FR 37578, July 1, 2014) that provided the Service does not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range. Therefore, we proceed to evaluating whether the species is endangered in a significant portion of its range—that is, whether there is any portion of the species' range for which both (1) the portion is significant, and (2) the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the "significance" question or the "status" question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range.

Following the court's holding in *Everson*, we now consider whether there are any significant portions of the species' range where the species is in danger of extinction now

(i.e., endangered). In undertaking this analysis for the bracted twistflower, we choose to address the status question first—we consider information pertaining to the geographic distribution of the species and the threats that the species faces to identify any portions of the range where the species is endangered.

The statutory difference between an endangered species and a threatened species is the timeframe in which the species becomes in danger of extinction; an endangered species is in danger of extinction now while a threatened species is not in danger of extinction now but is likely to become so in the foreseeable future. Thus, we reviewed the best scientific and commercial data available regarding the time horizon for the threats that are driving the bracted twistflower to warrant listing as a threatened species throughout all of its range. We considered whether the threats are geographically concentrated in any portion of the species' range in a way that would accelerate the time horizon for the species' exposure or response to the threats. We examined the following threats: habitat loss to development (Factor A); changes in fire frequency and the composition and structure of vegetation (Factor A); excessive herbivory by white-tailed deer and other ungulates (Factor C); and demographic and genetic consequences of small, isolated populations (Factor E), including cumulative effects.

All of the known threats are present throughout the bracted twistflower's range, but to different degrees in different areas. We identified the western portion of the species' range, consisting of two EOs in Uvalde County, and determined that there is a concentration of threats from browsing of white-tailed deer and other ungulates. These threats are not unique to this area, but are acting at greater intensity here (e.g., larger populations of white-tailed deer and other ungulates). One EO is fairly large in size and is in medium condition with a moderate level of genetic diversity. The other EO within Uvalde County only has data from one observation in 1997, which documented five plants, and is in low condition.

Although some threats to the bracted twistflower are concentrated in Uvalde County, the best scientific and commercial data available do not indicate that the concentration of threats, or the species' responses to the concentration of threats, are likely to accelerate the time horizon in which the species becomes in danger of extinction in that portion of its range. As a result, the bracted twistflower is not in danger of extinction now within Uvalde County. Since the larger population in this portion is in medium condition, this portion is not currently in danger of extinction. Therefore, we determine that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This does not conflict with the courts' holdings in *Desert Survivors* v. *U.S. Department of the Interior*, 321 F. Supp. 3d 1011, 1070-74 (N.D. Cal. 2018) and *Center for Biological Diversity* v. *Jewell*, 248 F. Supp. 3d 946, 959 (D. Ariz. 2017) because, in reaching this conclusion, we did not need to consider whether any portions are significant and, therefore, did not apply the aspects of the Final Policy's definition of "significant" that those court decisions held were invalid.

Determination of Status

Our review of the best scientific and commercial data available indicates that bracted twistflower meets the Act's definition of a threatened species. Therefore, we are listing the bracted twistflower as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition as a listed species, planning and implementation of recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls

for recovery actions to be carried out for listed species. The protection required by Federal agencies, including the Service, and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

The recovery planning process begins with development of a recovery outline made available to the public soon after a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions while a recovery plan is being developed. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) may be established to develop and implement recovery plans. The recovery planning process involves the identification of actions that are necessary to halt and reverse the species' decline by addressing the threats to its survival and recovery. The recovery plan identifies recovery criteria for review of when a species may be ready for removal from protected status ("delisting"), and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery outline, draft recovery plan, final recovery plan, and any revisions will be available on our website as they are completed

(*https://www.fws.gov/program/endangered-species*), or from our Austin Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

Following publication of this final rule, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of Texas will be eligible for Federal funds to implement management actions that promote the protection or recovery of the bracted twistflower. Information on our grant programs that are available to aid species recovery can be found at: *https://www.fws.gov/service/financial-assistance*.

Please let us know if you are interested in participating in recovery efforts for the bracted twistflower. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is listed as an endangered or threatened species and with respect to its critical habitat. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires

Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on projects permitted by the Federal Highways Administration, U.S. Department of Agriculture's Natural Resources Conservation Service, U.S. Army Corps of Engineers, Department of Defense's Joint Base San Antonio, and Federal Emergency Management Agency.

It is our policy, as published in the *Federal Register* on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a final listing on proposed and ongoing activities within the range of a listed species. The discussion below regarding protective regulations under section 4(d) of the Act complies with our policy.

II. Final Rule Issued Under Section 4(d) of the Act

Background

Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary shall issue such regulations as she deems necessary and advisable to provide for the conservation of species listed as threatened species. The U.S. Supreme Court has noted that statutory language similar to the language in section 4(d) of the Act authorizing the Secretary to take action that she "deems necessary and advisable" affords a large degree of deference to the agency (see *Webster* v. *Doe*, 486 U.S. 592, 600 (1988)). Conservation is defined in the Act to mean the use of all methods and procedures which

are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants. Thus, the combination of the two sentences of section 4(d) provides the Secretary with wide latitude of discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to the Service when adopting one or more of the prohibitions under section 9.

The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have upheld, as a valid exercise of agency authority, rules developed under section 4(d) that included limited prohibitions against takings (see *Alsea Valley Alliance* v. *Lautenbacher*, 2007 WL 2344927 (D. Or. 2007); *Washington Environmental Council* v. *National Marine Fisheries Service*, 2002 WL 511479 (W.D. Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (see *State of Louisiana* v. *Verity*, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, "once an animal is on the threatened list, the Secretary has an almost infinite number of options available to [her] with regard to the permitted activities for those species. [She] may, for example, permit taking, but not importation of such species, or [she] may choose to forbid both taking and importation but allow the transportation of such species" (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

The provisions of this 4(d) rule will promote conservation of the bracted twistflower by prohibiting the following activities, except as otherwise authorized or

permitted: importing or exporting; certain acts related to removing, damaging, and destroying; delivering, receiving, carrying, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; and selling or offering for sale in interstate or foreign commerce. The provisions of this rule are one of many tools that we will use to promote the conservation of the bracted twistflower.

As mentioned previously in **Available Conservation Measures,** section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of Federal actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 et seq.) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat—and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation.

This obligation does not change in any way for a threatened species with a species-specific 4(d) rule. Actions that result in a determination by a Federal agency of "not likely to adversely affect" continue to require the Service's written concurrence and actions that are "likely to adversely affect" a species require formal consultation and the formulation of a biological opinion.

Provisions of the 4(d) Rule

Exercising the Secretary's authority under section 4(d) of the Act, we have developed a final rule that is designed to address the bracted twistflower's conservation needs. As discussed previously under **Summary of Biological Status and Threats**, we have concluded that the bracted twistflower is likely to become in danger of extinction within the foreseeable future primarily due to urban and residential land development (Factor A), increases in woody plant cover (Factor A), excessive herbivory (Factor C), and small, isolated populations (Factor E). Section 4(d) requires the Secretary to issue such regulations as she deems necessary and advisable to provide for the conservation of each threatened species and authorizes the Secretary to include among those protective regulations any of the prohibitions that section 9(a)(2) of the Act prescribes for endangered species. Our regulations at 50 CFR 17.71 apply the prohibitions in section 9(a)(2) of the Act to all threatened plants. However, if we promulgate species-specific protective regulations for a given species, the species-specific regulations replace 50 CFR 17.71. We find that the protections, prohibitions, and exceptions in this final rule as a whole satisfy the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the bracted twistflower.

The protective regulations in this 4(d) rule for bracted twistflower incorporate prohibitions from section 9(a)(2) of the Act to address the threats to the species. In particular, this 4(d) rule will provide for the conservation of the bracted twistflower by prohibiting the following activities, unless they fall within specific exceptions or are otherwise authorized or permitted: importing or exporting; certain acts related to removing, damaging, and destroying; delivering, receiving, carrying, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; or selling or offering for sale in interstate or foreign commerce.

To protect the species, in addition to the protections that apply to Federal lands, the 4(d) rule prohibits a person from removing, cutting, digging up, or damaging or destroying the species on non-Federal lands in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law. As most populations of the bracted twistflower occur off Federal land, these protections in the 4(d) rule are key to its effectiveness. For example, any damage to the species on non-Federal land in violation of a Texas off-highway vehicle law will be prohibited by the 4(d) rule. Additionally, any damage incurred by the species due to criminal trespass on non-Federal lands will similarly violate the 4(d) rule. These protective regulations will help to limit specific actions that damage individual populations.

The exceptions to the prohibitions include all of the general exceptions to the prohibitions set forth at 50 CFR 17.71 and 17.72.

Despite these prohibitions regarding threatened species, we may under certain circumstances issue permits to carry out one or more otherwise-prohibited activities, including those described above. The regulations that govern permits for threatened plants state that the Director may issue a permit authorizing any activity otherwise prohibited with regard to threatened species (50 CFR 17.72). Those regulations also state that the permit shall be governed by the provisions of § 17.72 unless a species-specific rule applicable to the plant is provided in §§ 17.73 to 17.78. Therefore, permits for threatened species are governed by the provisions of § 17.72 unless a species-specific 4(d) rule provides otherwise. However, under our recent revisions to § 17.71, the prohibitions in § 17.71(a) do not apply to any plant listed as a threatened species after September 26, 2019. As a result, for threatened plant species listed after that date, any protections must be contained in a species-specific 4(d) rule. We did not intend for those revisions to limit or alter the applicability of the permitting provisions in § 17.72, or to require that every species-specific 4(d) rule spell out any permitting provisions that apply

to that species and species-specific 4(d) rule. To the contrary, we anticipate that permitting provisions would generally be similar or identical for most species, so applying the provisions of § 17.72 unless a species-specific 4(d) rule provides otherwise would likely avoid substantial duplication. Under 50 CFR 17.72 with regard to threatened plants, a permit may be issued for the following purposes: for scientific purposes, to enhance propagation or survival, for economic hardship, for botanical or horticultural exhibition, for educational purposes, or for other purposes consistent with the purposes and policy of the Act.

We recognize the beneficial and educational aspects of activities with seeds of cultivated plants, which generally enhance the propagation of the species and, therefore, such activities will satisfy permit requirements under the Act. We intend to monitor the interstate and foreign commerce and import and export of these specimens in a manner that will not inhibit such activities, providing the activities do not represent a threat to the survival of the species in the wild. In this regard, seeds of cultivated specimens will not be subject to the prohibitions above, provided that a statement that the seeds are of "cultivated origin" accompanies the seeds or their container.

Propagation is currently taking place for the bracted twistflower and will continue to be an important recovery tool. This will include collecting seeds from wild populations, following Center for Plant Conservation guidelines and the joint "Policy Regarding Controlled Propagation of Species Listed Under the Endangered Species Act" (65 FR 56916; September 20, 2000), and propagating them for seed increase, population augmentation, introduction, and research related to the species' recovery.

We recognize the special and unique relationship with our State natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies,

because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist us in implementing all aspects of the Act. In this regard, section 6 of the Act provides that we shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is a party to a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, will be able to conduct activities designed to conserve bracted twistflower that may result in otherwise prohibited activities without additional authorization.

Nothing in this 4(d) rule will change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or our ability to enter into partnerships for the management and protection of the bracted twistflower. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between us and other Federal agencies, where appropriate.

III. Critical Habitat

Background

Section 4(a)(3) of the Act requires that, to the maximum extent prudent and determinable, we designate a species' critical habitat concurrently with listing the species. Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (i.e., range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

This critical habitat designation was proposed when the regulations defining "habitat" (85 FR 81411; December 16, 2020) and governing the 4(b)(2) exclusion process for the Service (85 FR 82376; December 18, 2020) were in place and in effect. However, those two regulations have been rescinded (87 FR 37757; June 24, 2022, and 87 FR 43433; July 21, 2022) and no longer apply to any designations of critical habitat. Therefore, for this final rule designating critical habitat for the bracted twistflower, we apply the regulations at 424.19 and the 2016 Joint Policy on 4(b)(2) exclusions (81 FR 7226; February 11, 2016). Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action

they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation also does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the Federal agency would be required to consult with the Service under section 7(a)(2) of the Act. However, even if the Service were to conclude that the proposed activity would result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement "reasonable and prudent alternatives" to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat).

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the *Federal Register* on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information from the SSA report and information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed journals; conservation plans developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded

by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in the 4(d) rule. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Physical or Biological Features Essential to the Conservation of the Species

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas we will designate as critical habitat from within the geographical area occupied by the species at the time of listing, we consider the physical or biological features that are essential to the conservation of the species and which may require special management considerations or protection. The regulations at 50 CFR 424.02 define "physical or biological features essential to the conservation of the species" as the features that occur in specific areas and that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity. For example, physical features essential to the conservation of the species might include gravel of a particular size required for spawning, alkaline soil for seed germination,

protective cover for migration, or susceptibility to flooding or fire that maintains necessary early-successional habitat characteristics. Biological features might include prey species, forage grasses, specific kinds or ages of trees for roosting or nesting, symbiotic fungi, or absence of a particular level of nonnative species consistent with conservation needs of the listed species. The features may also be combinations of habitat characteristics and may encompass the relationship between characteristics or the necessary amount of a characteristic essential to support the life history of the species.

In considering whether features are essential to the conservation of the species, we may consider an appropriate quality, quantity, and spatial and temporal arrangement of habitat characteristics in the context of the life-history needs, condition, and status of the species. These characteristics include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing (or development) of offspring; and habitats that are protected from disturbance.

Summary of Essential Physical or Biological Features

We derive the specific physical or biological features essential to the conservation of the bracted twistflower from studies of the species' habitat, ecology, and life history as described below. Additional information can be found in the SSA report available on *https://www.regulations.gov* and *https://ecos.fws.gov/ecp/species/2856*. We have determined that the following physical or biological features are essential to the conservation of the bracted twistflower:

Geological Substrate and Soils

The prevalent Cretaceous geological formations in the Edwards Plateau of central Texas include the Edwards group of formations and its equivalent, the Devils River formation, which replaces the Edwards to the west and south; both of these formations

overlie the Glen Rose formation (Maclay and Small 1986, pp. 17–24). Karstic, porous limestones are abundant in the Edwards and Devils River formations, and conversely, the Glen Rose limestones have relatively little porosity. The Edwards Aquifer occupies the porous upper strata, and many seeps and springs occur along the Balcones Escarpment, where the boundary of these upper formations with the Glen Rose is exposed at the surface. Some units of the Edwards, Devils River, and Glen Rose formations are dolomitic, meaning that, in addition to calcium, they also contain significant amounts of magnesium. Bracted twistflower populations occur in close proximity to the exposed boundary of the Edwards or Devils River and Glen Rose formations (McNeal 1989, p. 15; Zippin 1997, p. 223; Carr 2001, p. 1; Pepper 2010, p. 5). Most populations are less than 2 km (1.2 mi) from this boundary, as seen in less detailed, small-scale geological maps (Fowler 2014, pp. 11-12). A detailed, large-scale geological map of northern Bexar County (Clark et al. 2009, entire) reveals that two bracted twistflower populations (Eisenhower City Park and Rancho Diana) occur in a narrow stratum identified as a basal nodular hydrostratigraphic member of the Kainer Formation, Edwards Group (Clark et al. 2016, pp. 6–7). This stratum is immediately below a dolomitic hydrostratigraphic member of the Kainer Formation, and immediately above a cavernous hydrostratigraphic member of the Glen Rose limestone (Service 2021, pp. 8–9, figures 6–8). Populations often occur in horizontal bands where these strata are exposed along slopes. Soils in the immediate vicinity of individual plants are very shallow clays with abundant rock fragments.

Although we do not know why the species is associated with the Edwards-Glen Rose boundary, Fowler (2014, p. 12) proposed two hypotheses: (1) The species depends on increased seepage between these formations; and (2) the species requires higher levels of magnesium ions that leach from dolomitic limestone in the lower strata of the Edwards formation. These hypotheses are not mutually exclusive.

Ecological Community

Bracted twistflower occurs in native, old-growth juniper-oak woodlands and shrublands along the Balcones Escarpment. Individual plants frequently occur near or under a canopy of Ashe juniper, Texas live oak, Texas persimmon (*Diospyros texana*), Texas mountain laurel, Texas red oak, or other trees. In many sites, bracted twistflower inhabits dense thickets of evergreen sumac (*Rhus virens*), agarita (*Mahonia trifoliolata*), Roemer acacia (*Acacia roemeriana*), Lindheimer silk-tassel (*Garrya ovata* ssp. *lindheimeri*), thoroughwort (*Ageratina havanensis*), oreja de ratón (*Bernardia myricifolia*), or other shrubs.

Bracted twistflower is a winter annual plant that persists only where individuals produce enough seeds to sustain a reserve of viable seeds in the soil. White-tailed deer and introduced ungulates heavily browse the flower stalks of individual plants before they can set seed, thus contributing to the decline of populations. Herbivory threatens the species throughout its range, except where it is protected from deer by fencing or intensive herd management (hunting) (McNeal 1989, p. 17; Damude and Poole 1990, pp. 52–53; Dieringer 1991, p. 341; Zippin 1997, pp. 39–197, 227; Leonard 2010, pp. 36–43; Fowler 2014, pp. 17, 19). The extremely high deer densities in the Edwards Plateau of Texas exacerbate the species' vulnerability to herbivory (Zippin 1997, p. 227).

In sites that are protected from white-tailed deer, the most robust bracted twistflower plants occur where woody plant cover is less dense (Damude and Poole 1990, pp. 29 –30; Poole et al. 2007, p. 470). The two largest populations, Laurel Canyon and Rancho Diana, occur in relatively open vegetation of low shrubs and sotol (*Dasylirion texanum*), where there is little or no juniper cover. Laboratory and field experiments demonstrated that growth and reproduction of bracted twistflower benefits from higher light intensity and duration than it receives in many of the extant populations (Fowler 2010, pp. 10–11; Leonard 2010, p. 63; Ramsey 2010, p. 20); its persistence in dense

thickets may be due to increased herbivory of the plants growing in more open vegetation (Leonard 2010, p. 63; Ramsey 2010, p. 22). Deer-exclusion cages significantly increased the probability of survival, reproduction, above-ground biomass, and seed set, compared to un-caged plants, at a bracted twistflower population near Mesa Drive in Austin where the deer population was very high (Zippin 1997, p. 60). In 2012, the City of San Antonio Parks and Recreation Department (SAPRD) protected the Rancho Diana population with a deer-fenced exclosure. In August and September 2017, SAPRD personnel cut to ground level all woody vegetation in a 760-square-meter (m^2) (8,180-square-foot (ft^2)) plot within the exclosure. In May 2018, the number of bracted twistflower plants within the cleared plot was 16 times greater, and seed production within the plot was 15 times greater, than in any of 4 previous years (Cozort 2019, pers. comm). In synthesis, shaded juniper thickets may serve as refugia from herbivory, but they are not the species' optimal habitat. Bracted twistflower is best adapted to microsites at canopy gaps and edges within the juniper-oak woodland where it receives direct sunlight at least part of the day. It is likely that wildfires occurred more frequently in bracted twistflower habitats prior to European settlement, and that the more recent reduction in fire frequency has allowed Ashe juniper to increase in cover and density (Bray 1904, pp. 14–15, 23–24; Fonteyn et al. 1988, p. 79; Service 2021, pp. 12, 29–30).

Bracted twistflower produces seeds primarily through outcrossing (fertilization between different individuals), and therefore depends heavily on pollinators, including a native leafcutter bee, *Megachile comata*, for reproduction (Dieringer 1991, pp. 341–343). Halictid bees (sweat bees) and other native bee species may also be effective pollinators (Service 2021, p. 5). Therefore, bracted twistflower habitats must also support populations of leafcutter bees and other native bee species that effectively pollinate the species. Native bees in turn require, as sources of pollen and nectar, a diverse, abundant

understory of native forb and shrub species that in the past was periodically renewed by wildfires.

In summary, the essential physical and biological features of bracted twistflower are:

(1) Karstic, dolomitic limestones underlain by less permeable limestone strata, where perched aquifers seep to the surface along slopes. These are often found within 2 km of the exposed boundary of the Edwards or Devils River and Glen Rose geological formations;

(2) Native, old-growth juniper-oak woodlands and shrublands along the Balcones Escarpment;

(3) Herbivory from white-tailed deer and introduced ungulates of such low intensity that it does not severely deplete populations prior to seed dispersal;

(4) Tree and shrub canopy gaps that allow direct sunlight to reach the herbaceous plant layer at least 6 hours per day; and

(5) Viable populations of native bee species and the abundant, diverse forb and shrub understory that support them.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species and which may require special management considerations or protection. The features essential to the conservation of this species may require special management considerations or protections to reduce the following threats: Habitat loss due to urban and residential development, increased woody plant cover, severe herbivory by native and introduced ungulates, and trampling and erosion from recreational use. Management activities that could ameliorate these threats include (but are not limited to) juniper thinning, prescribed fire, fencing to exclude deer and other

herbivores, herd management of local ungulate populations, and protection from foot and bicycle traffic. These management activities will protect the physical and biological features essential for the conservation of the species by reducing herbivory, maintaining open canopies, protecting the habitat from trampling and erosion, and conserving diverse shrub and forb understory vegetation that supports the species' native bee pollinators.

Criteria Used To Identify Critical Habitat

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat. We are designating critical habitat within occupied habitat in all three representation areas, including areas that preserve the populations with the highest resiliency. We are not designating any areas outside the geographical area occupied by the species because we have not identified any unoccupied areas that meet the definition of critical habitat.

We considered the geographic areas occupied by the species at the time of listing to consist of EOs with survey data within the past 7 years or areas in which we confirmed that habitat remained intact using aerial imagery. We know that seeds can remain dormant and viable in the soil of intact sites for at least 7 years. Due to the large proportion of private lands within the range of the species, the majority of known locations occur on publicly owned conservation lands that can be accessed for surveys. Most of the critical habitat units have been surveyed annually, and the habitats are protected by the cities of Austin and San Antonio. We do not have recent surveys for two sites, EOs 10 and 18 (Garner State Park and Medina Lake). However, we have precise

geographic coordinates for these populations collected with Global Positioning System (GPS) instruments. In a Geographic Information System (GIS), we have overlaid the geographic coordinates of these sites on recent orthographically corrected aerial photographs and have determined that the habitats remain intact.

For areas within the geographic area occupied by the species at the time of listing, we delineated critical habitat unit boundaries using the following criteria. We delineated each critical habitat unit around areas where karstic, dolomitic limestones of the Edwards or Devils River formations overlay the less permeable Glen Rose formation. The elevation ranges and degree of slope of these geological strata vary among EOs. However, because the exposed strata that support bracted twistflower populations are nearly horizontal, we used the elevation range where individuals have been observed at each EO to delineate this essential geological feature over the short distances spanned by that EO. Similarly, since seepage from overlying karst aquifers occurs on slopes, we also used the range of slopes where individuals have been observed at each EO to delineate this essential feature at that EO. Thus, we combined the parameters of the observed elevation range and slope range of the species at each EO to delimit each critical habitat unit. However, we excluded any areas that lack natural vegetation, such as roads and buildings, as determined through examination of recent aerial photographs. We also did not designate critical habitat units at EOs that are no longer occupied, or that no longer possess the essential physical and biological features due to development or significant disturbance. Finally, we did not extend critical habitat units beyond areas that have been surveyed, because we cannot determine if they contain the essential physical or biological features.

When determining critical habitat boundaries, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack physical or biological features necessary for bracted

twistflower. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this rule have been excluded by text in the rule and are not designated as critical habitat. Therefore, a Federal action involving these lands will not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action will affect the physical or biological features in the adjacent critical habitat.

We are designating as critical habitat areas that we have determined are occupied at the time of listing (i.e., currently occupied) and that contain one or more of the physical or biological features that are essential to support life-history processes of the species.

Units are designated based on one or more of the physical or biological features being present to support bracted twistflower's life-history processes. Some units contain all of the identified physical or biological features and support multiple life-history processes. Some units contain only some of the physical or biological features necessary to support the bracted twistflower's particular use of that habitat.

The critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document under **Regulation Promulgation**. We include more detailed information on the boundaries of the critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which each map is based available to the public on *https://www.regulations.gov* at Docket No. FWS-R2-ES-2021-0013.

Final Critical Habitat Designation

We are designating three units as critical habitat for the bracted twistflower. The critical habitat areas we describe below constitute our current best assessment of areas

that meet the definition of critical habitat for the bracted twistflower. The three areas we designate as critical habitat are: (1) Northeast Unit; (2) Central Unit; and (3) Southwest Unit. Table 3 shows the critical habitat units, the land ownership, and the approximate area of each unit. All designated units are occupied.

Table 3—Critical habitat units for the bracted twistflower
[Area estimates reflect all land within critical habitat unit boundaries.]

Unit	Subunit (Conservation Area or Property Name)	Property Owner	Occupied?	Critical Habitat Size	
				Acres	Hectares
1. Northeast	1a. Barton Creek Greenbelt/Wilderness Park (EOs 17, 36)	City of Austin	Yes	690.50	279.44
	1b. Bull Creek District Park (EO 35)	City of Austin	Yes	2.32	0.94
	1c. Mount Bonnell Park (EO 9)	City of Austin	Yes	2.00	0.81
	1d. Ullrich Water Treatment Plant (Bee Creek Park) (EO 7)	City of Austin	Yes	19.47	7.88
2. Central	2a. Eisenhower Park (EO 23)	City of San Antonio	Yes	78.16	31.63
	2b. Rancho Diana (EO 31)	City of San Antonio	Yes	395.73	160.15
	2c. Laurel Canyon Ranch Easement (EO 25)	Laurel C. Canyon Ranch LP; City of San Antonio holds conservation easement	Yes	39.59	16.02
	2d. Medina River (EO 18)	Private	Yes	23.28	9.42
3. Southwest	Garner State Park (EO 10)	Texas Parks and Wildlife Department	Yes	345.22	139.71
			Totals:	1,596.27	646.00

Note: Area sizes may not sum exactly due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for the bracted twistflower, below.

Unit 1: Northeast

Unit 1 consists of approximately 715 ac (289 ha) of occupied habitat within Travis County, Texas, and is composed of four subunits. All four subunits are owned by the City of Austin with the majority of the designated critical habitat occurring on lands managed for conservation as part of the BCP. This unit contains the essential physical and biological features of proximity to the geological boundary, old-growth juniper-oak woodlands, tree and shrub canopy gaps, and viable native bee populations. Some areas within this unit are protected from deer herbivory. Threats occurring within this unit include juniper encroachment, infrequent wildfire, white-tailed deer herbivory, off-trail recreational uses, and small population sizes. Special management needed for the bracted twistflower within this unit includes white-tailed deer herd management, thinning of juniper trees, and prescribed burning. For subunit descriptions, refer to the proposed rule (86 FR 62668; November 10, 2021).

Unit 2: Central

Unit 2 consists of approximately 537 ac (217 ha) of occupied habitat within Bexar and Medina Counties in Texas. This unit is composed of four subunits and includes the largest known population of bracted twistflower. Land ownership within this unit consists of City of San Antonio owned properties and well as two privately-owned properties, one of which has a conservation easement held by the City of San Antonio. This unit contains the essential physical and biological features of proximity to the geological boundary, old-growth juniper-oak woodlands, protection from deer herbivory, tree and shrub canopy gaps, and viable native bee populations.

Threats to this unit include herbivory from white-tailed deer, juniper encroachment, infrequent wildlife, off-trail recreational uses, and small population size.
Special management needed for the bracted twistflower within this unit includes white-tailed deer herd management, thinning of juniper trees, and prescribed burning.

Unit 3: Southwest

Unit 3 consists of occupied habitat within Uvalde County, Texas. Garner State Park was donated by local landowners to the State of Texas in 1941, and is managed by TPWD. One population of bracted twistflower persists at this very heavily visited, 1,786-ac (723-ha) State park. We are designating 345.22 ac (139.71 ha) as occupied critical habitat for the bracted twistflower at Garner State Park (EO 10). This unit contains the essential physical and biological features of proximity to the geological boundary, old-growth juniper-oak woodlands, tree and shrub canopy gaps, and viable native bee populations. Specific threats include herbivory from white-tailed deer and introduced ungulates, juniper encroachment into canopy gaps, off-trail recreational uses of habitats, and infrequent wildfire. Special management needed for the bracted twistflower within this unit includes white-tailed deer herd management and thinning of juniper trees; if it can be conducted safely, management could include prescribed burning.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. We published a final rule revising the definition of destruction or adverse modification on August 27, 2019 (84 FR 44976). Destruction or adverse modification means a direct or

indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 et seq.) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat—and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation.

Compliance with the requirements of section 7(a)(2) is documented through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define “reasonable and prudent alternatives” (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action,

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,

(3) Are economically and technologically feasible, and

(4) Would, in the Service Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 set forth requirements for Federal agencies to reinitiate consultation on previously reviewed actions. These requirements apply when the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law) and, subsequent to the previous consultation: (a) if the amount or extent of taking specified in the incidental take statement is exceeded; (b) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or (d) if a new species is listed or critical habitat designated that may be affected by the identified action.

In such situations, Federal agencies sometimes may need to request reinitiation of consultation with us, but Congress also enacted some exceptions in 2018 to the requirement to reinitiate consultation on certain land management plans on the basis of a new species listing or new designation of critical habitat that may be affected by the

subject Federal action. See 2018 Consolidated Appropriations Act, Pub. L. 115-141, Div, O, 132 Stat. 1059 (2018).

Application of the "Adverse Modification" Standard

The key factor related to the destruction or adverse modification determination is whether implementation of the proposed Federal action directly or indirectly alters the designated critical habitat in a way that appreciably diminishes the value of the critical habitat as a whole for the conservation of the listed species. As discussed above, the role of critical habitat is to support physical or biological features essential to the conservation of a listed species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may violate section 7(a)(2) of the Act by destroying or adversely modifying such habitat, or that may be affected by such designation.

Activities that the Services may, during a consultation under section 7(a)(2) of the Act, consider likely to destroy or adversely modify critical habitat include, but are not limited to, actions that would disturb the soil or underlying rock strata, reduce the diversity and abundance of native bees and bee-pollinated plant species, or diminish the perched aquifers that supply seep moisture to bracted twistflower habitats. Such activities could include, but are not limited to, excavation of soil or underlying rock strata with bulldozers, graders, back-hoes, or excavators within habitats; application of insecticides that kill or impair native bees; application of herbicides that kill or damage native bee-pollinated plants; and displacement of native juniper-oak woodlands with surface cover, such as pavement and buildings, that impede infiltration of rainwater into the soil. These activities could deplete or destroy the soil seed reserve of viable seeds of the bracted twistflower, diminish the abundance of the species' pollinators and thereby reduce seed

production and gene flow, or alter the soil and hydrology so that it no longer supports the germination, establishment, and reproduction of the bracted twistflower.

Exemptions

Application of Section 4(a)(3) of the Act

Section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) provides that the Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense (DoD), or designated for its use, that are subject to an integrated natural resources management plan (INRMP) prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.

In preparing this final rule, we have determined that the lands within the critical habitat designation for the bracted twistflower are not owned, managed, or used by the DoD.

Consideration of Impacts under Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from designated critical habitat based on economic impacts, impacts on national security, or any other relevant impacts. Exclusion decisions are governed by the regulations at 50 CFR 424.19 and the Policy Regarding Implementation of Section 4(b)(2) of the Endangered Species Act (hereafter, the "2016 Policy"; 81 FR 7226, February 11, 2016), both of which were developed jointly with the National Marine Fisheries Service (NMFS). We also refer to a 2008 Department of the Interior Solicitor's opinion entitled "The Secretary's Authority to Exclude Areas from a Critical Habitat

Designation under Section 4(b)(2) of the Endangered Species Act" (M-37016). We explain each decision to exclude areas, as well as decisions not to exclude, to demonstrate that the decision is reasonable.

In considering whether to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, the Secretary may exercise discretion to exclude the area only if such exclusion would not result in the extinction of the species. In making the determination to exclude a particular area, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor. We describe below the process that we undertook for taking into consideration each category of impacts and our analyses of the relevant impacts.

Exclusions Based on Economic Impacts

Section 4(b)(2) of the Act and its implementing regulations require that we consider the economic impact that may result from a designation of critical habitat. In order to consider economic impacts, we prepared an incremental effects memorandum (IEM) and screening analysis which, together with our narrative and interpretation of effects, we consider our draft economic analysis of the critical habitat designation and related factors (IEc 2020, entire). The analysis, dated December 7, 2020, was made available for public review from November 10, 2021, through January 10, 2022 (86 FR 62668). The economic analysis addressed probable economic impacts of critical habitat designation for bracted twistflower. Following the close of the comment period, we reviewed and evaluated all information submitted during the comment period that may pertain to our consideration of the probable incremental economic impacts of this critical

habitat designation. Additional information relevant to the probable incremental economic impacts of critical habitat designation for the bracted twistflower is summarized below and available in the screening analysis for the bracted twistflower (IEc 2020, entire), available at *https://www.regulations.gov*.

Future consultation activity within the critical habitat area is likely to be very limited, but may include the following categories: (1) Land restoration of enhancement; (2) agriculture; (3) development; (4) transmission line construction; (5) oil or gas pipelines; (6) transportation; and (7) stream modification. The majority (99 percent) of the critical habitat area is within protected areas and conservation lands. The consultation history indicates that few projects and activities have occurred within critical habitat and within the broader range of the species over the past 9 years. Future consultations within the critical habitat units are anticipated to range from 0 to 0.1 formal consultations per year, 0.1 to 0.4 informal consultations per year, and 0 to 0.9 technical assistance efforts per year. Based on the average annual rate of consultations, the incremental administrative costs of consultation for the critical habitat units may range from $280 to $2,100 in an average year (IEc 2020, p. 15). We received no new information pertaining to our economic analysis during the comment period and have made no changes to our analysis of economic impacts in this final rule.

We considered the economic impacts of the critical habitat designation. The Secretary is not exercising her discretion to exclude any areas from this designation of critical habitat for the bracted twistflower based on economic impacts.

Exclusions Based on Impacts on National Security and Homeland Security

In preparing this rule, we determined that none of the lands within the designated critical habitat for the bracted twistflower are owned or managed by the DoD or Department of Homeland Security, and, therefore, we anticipate no impact on national security or homeland security. We did not receive any additional information during the

public comment period for the proposed designation regarding impacts of the designation on national security or homeland security that would support excluding any specific areas from this final critical habitat designation under the authority of section 4(b)(2) of the Act and our implementing regulations at 50 CFR 424.19.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security discussed above. To identify other relevant impacts that may affect the exclusion analysis, we consider a number of factors, including whether there are permitted conservation plans covering the species in the area—such as HCPs, safe harbor agreements (SHAs), or candidate conservation agreements with assurances (CCAAs)—or whether there are non-permitted conservation agreements and partnerships that may be impaired by designation of, or exclusion from, critical habitat. In addition, we look at whether Tribal conservation plans or partnerships, Tribal resources, or government-to-government relationships of the United States with Tribal entities may be affected by the designation. We also consider any State, local, social, or other impacts that might occur because of the designation.

We received a request to exclude a portion of the subunit 1d: Ullrich Water Treatment Plant, from the City of Austin. Although a portion of this subunit is within the Balcones Canyonlands Preserve, the portion requested for exclusion is outside the preserve and therefore not covered by the Balcones Canyonlands Preserve Land Management Plan. Because the area requested for exclusion occurs outside the Balcones Canyonlands Preserve and is not protected under the Balcones Canyonlands Preserve Land Management Plan, we determined that it does not qualify for an exclusion based on a permitted plan and are not excluding this area from critical habitat. The requester did not present a reasoned rationale supporting their requests for exclusion on any other basis, which is necessary for us to conduct an exclusion analysis.

Required Determinations

Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 et seq.), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; 5 U.S.C. 801 et seq.), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification

statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and agricultural businesses with annual sales less than $750,000. To determine if potential economic impacts to these small entities are significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term "significant economic impact" is meant to apply to a typical small business firm's business operations.

Under the RFA, as amended, and as understood in light of recent court decisions, Federal agencies are required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself; in other words, the RFA does not require agencies to evaluate the potential impacts to indirectly regulated entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried out by the agency is not likely to destroy or adversely modify critical habitat. Therefore, under section 7, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Consequently, it is our

position that only Federal action agencies will be directly regulated by this designation. There is no requirement under the RFA to evaluate the potential impacts to entities not directly regulated. Moreover, Federal agencies are not small entities. Therefore, because no small entities will be directly regulated by this rulemaking, the Service certifies that this final critical habitat designation will not have a significant economic impact on a substantial number of small entities.

In summary, we have considered whether this final designation will result in a significant economic impact on a substantial number of small entities. For the above reasons and based on currently available information, we certify that this final critical habitat designation will not have a significant economic impact on a substantial number of small business entities. Therefore, a regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. In our economic analysis, we did not find that this critical habitat designation will significantly affect energy supplies, distribution, or use. The Office of Management and Budget (OMB) has provided guidance for implementing this Executive Order that outlines nine outcomes that may constitute "a significant adverse effect" when compared to not taking the regulatory action under consideration. The economic analysis finds that none of these criteria are relevant to this analysis. Thus, based on information in the economic analysis, energy-related impacts associated with bracted twistflower conservation activities within critical habitat are not expected. As such, the designation of critical habitat is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.), we make the following finding:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both "Federal intergovernmental mandates" and "Federal private sector mandates." These terms are defined in 2 U.S.C. 658(5)–(7). "Federal intergovernmental mandate" includes a regulation that "would impose an enforceable duty upon State, local, or Tribal governments" with two exceptions. It excludes "a condition of Federal assistance." It also excludes "a duty arising from participation in a voluntary Federal program," unless the regulation "relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and Tribal governments under entitlement authority," if the provision would "increase the stringency of conditions of assistance" or "place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding," and the State, local, or Tribal governments "lack authority" to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. "Federal private sector mandate" includes a regulation that "would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program."

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify

critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not believe that this rule will significantly or uniquely affect small governments because it will not produce a Federal mandate of $100 million or greater in any year; that is, it is not a ''significant regulatory action'' under the Unfunded Mandates Reform Act. The designation of critical habitat imposes no obligations on State or local governments. By definition, Federal agencies are not considered small entities, although the activities they fund or permit may be proposed or carried out by small entities. The lands being designated as critical habitat are primarily owned by the cities of Austin and San Antonio or the State of Texas and none of these government entities fits the definition of "small governmental jurisdiction." Consequently, we do not believe that the critical habitat designation will significantly or uniquely affect small government entities. As such, a Small Government Agency Plan is not required.

Takings—Executive Order 12630

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for bracted twistflower in a takings implications assessment. The Act does not authorize the Service to regulate private actions on private lands or confiscate private property as a result of critical habitat

designation. Designation of critical habitat does not affect land ownership, or establish any closures, or restrictions on use of or access to the designated areas. Furthermore, the designation of critical habitat does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. However, Federal agencies are prohibited from carrying out, funding, or authorizing actions that would destroy or adversely modify critical habitat. A takings implications assessment has been completed and concludes that this designation of critical habitat for the bracted twistflower does not pose significant takings implications for lands within or affected by the designation.

Federalism—Executive Order 13132

In accordance with E.O. 13132 (Federalism), this rule does not have significant Federalism effects. A federalism summary impact statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of this critical habitat designation with, appropriate State resource agencies. From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, this final rule does not have substantial direct effects either on the States, or on the relationship between the national government and the States, or on the distribution of powers and responsibilities among the various levels of government. The designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the species are more clearly defined, and the physical or biological features of the habitat necessary for the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist State

and local governments in long-range planning because they no longer have to wait for case-by-case section 7 consultations to occur.

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) of the Act will be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule will not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, this final rule identifies the physical or biological features essential to the conservation of the species. The designated areas of critical habitat are presented on maps, and the rule provides several options for the interested public to obtain more detailed location information, if desired.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain information collection requirements, and a submission to the OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.) is not required. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

Regulations adopted pursuant to section 4(a) of the Act are exempt from the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 et seq.) and do not require an

environmental analysis under NEPA. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244). This includes listing, delisting, and reclassification rules, as well as critical habitat designations and species-specific protective regulations promulgated concurrently with a decision to list or reclassify a species as threatened. The courts have upheld this position (*e.g.*, *Douglas County* v. *Babbitt*, 48 F.3d 1495 (9th Cir. 1995) (critical habitat); *Center for Biological Diversity* v. *U.S. Fish and Wildlife Service*, 2005 WL 2000928 (N.D. Cal. Aug. 19, 2005) (concurrent 4(d) rule)).

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with federally recognized Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We have determined that no Tribal lands fall within the boundaries of the critical habitat for the bracted twistflower, so no Tribal lands will be affected by the designation.

References Cited

A complete list of references cited in this rulemaking is available on the internet at *https://www.regulations.gov* and upon request from the Austin Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Austin Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

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

Regulation Promulgation

Accordingly, we 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; and 4201–4245, unless otherwise noted.

2. In § 17.12, amend paragraph (h) by adding an entry for "*Streptanthus bracteatus"* to the List of Endangered and Threatened Plants in alphabetical order under FLOWERING PLANTS to read as follows:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Scientific name	Common name	Where listed	Status	Listing citations and applicable rules
FLOWERING PLANTS				
* * * * * * *				
Streptanthus bracteatus	Bracted twistflower	Wherever found	T	88 FR [Insert *Federal Register* page where the document begins], [Insert date of publication in the *Federal Register*]; 50 CFR 17.73(h);[4d] 50 CFR 17.96(a).[CH]
* * * * * * *				

3. Amend § 17.73 by adding paragraph (h) to read as follows:

§ 17.73 Special rules—flowering plants.

* * * * *

(h) *Streptanthus bracteatus* (bracted twistflower).

(1) *Prohibitions.* The following prohibitions that apply to endangered plants also apply to the bracted twistflower. Except as provided under paragraph (h)(2) of this section, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as set forth at § 17.61(b) for endangered plants.

(ii) Remove and reduce to possession the species from areas under Federal jurisdiction; maliciously damage or destroy the species on any such area; or remove, cut, dig up, or damage or destroy the species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law.

(iii) Interstate or foreign commerce in the course of commercial activity, as set forth at § 17.61(d) for endangered plants.

(iv) Sale or offer for sale, as set forth at § 17.61(e) for endangered plants.

(2) *Exceptions from prohibitions.* In regard to this species:

(i) You may conduct activities as authorized by permit under § 17.72.

(ii) Any employee or agent of the Service or of a State conservation agency that is operating a conservation program pursuant to the terms of a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by that agency for such purposes, may, when acting in the course of official duties, remove and reduce to possession from areas under Federal jurisdiction members of bracted twistflower that are covered by an approved cooperative agreement to carry out conservation programs.

(iii) You may engage in any act prohibited under paragraph (h)(1) of this section with seeds of cultivated specimens, provided that a statement that the seeds are of "cultivated origin" accompanies the seeds or their container.

4. In § 17.96, amend paragraph (a) by adding an entry for "Family Brassicaceae: *Streptanthus bracteatus* (bracted twistflower)", immediately after the entry for "Family Brassicaceae: *Physaria thamnophila* (Zapata bladderpod)", to read as follows:

§ 17.96 Critical habitat—plants.

* * * * *

Family Brassicaceae: *Streptanthus bracteatus* (bracted twistflower)

(1) Critical habitat units are depicted for Bexar, Medina, Travis, and Uvalde Counties, Texas, on the maps in this entry.

(2) Within these areas, the physical or biological features essential to the conservation of bracted twistflower consist of the following components:

(i) Karstic, dolomitic limestones underlain by less permeable limestone strata, where perched aquifers seep to the surface along slopes. These are often found within 2 kilometers of the exposed boundary of the Edwards or Devils River and Glen Rose geological formations;

(ii) Native, old-growth juniper-oak woodlands and shrublands along the Balcones Escarpment;

(iii) Herbivory from white-tailed deer and introduced ungulates of such low intensity that it does not severely deplete populations prior to seed dispersal;

(iv) Tree and shrub canopy gaps that allow direct sunlight to reach the herbaceous plant layer at least 6 hours per day; and

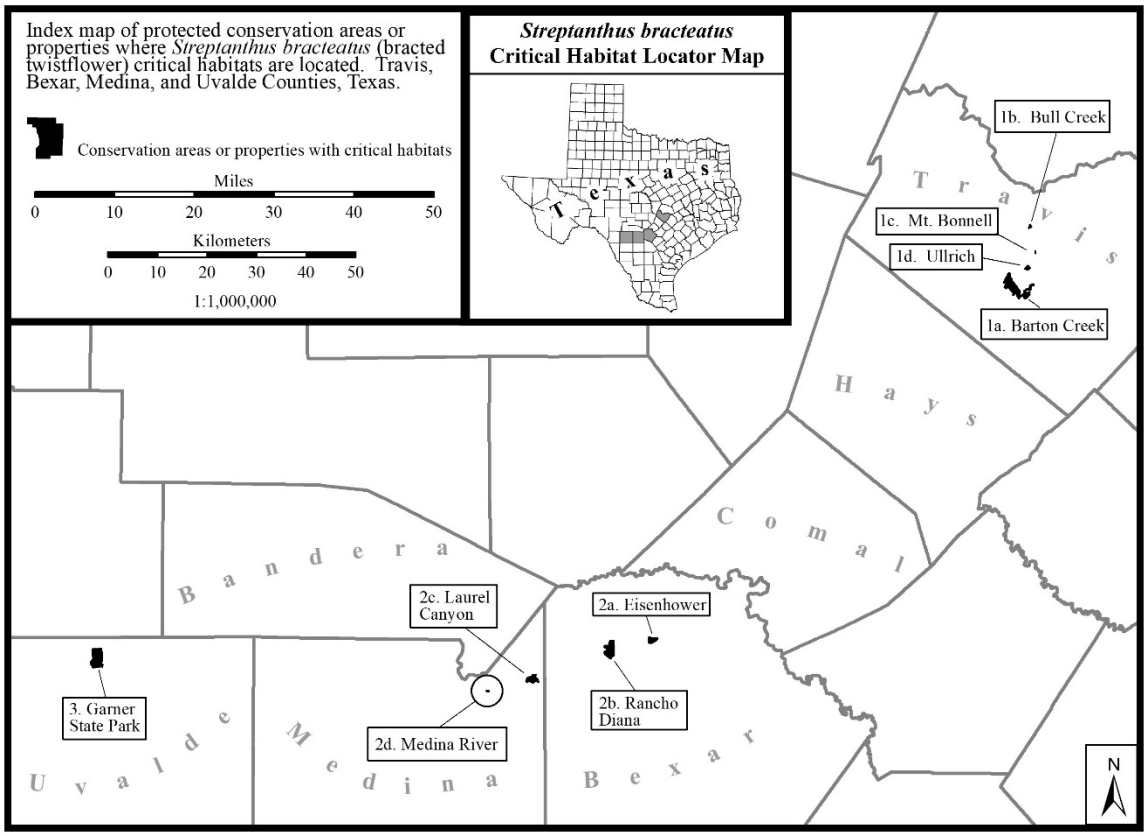
(v) Viable populations of native bee species and the abundant, diverse forb and shrub understory that support them.

(3) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(4) Data layers defining map units were created using U.S. Geological Survey digital elevation models. For each unit/subunit, we determined the range of occupied elevations and the range of occupied slopes; critical habitat polygons consist of the intersection of the occupied elevations and occupied slopes. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at *https://www.regulations.gov* at Docket No. FWS-R2-ES-2021-0013, and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(5) Index map follows:

Figure 1 to *Streptanthus bracteatus* (bracted twistflower) paragraph (5)


Index map of protected conservation areas or properties where *Streptanthus bracteatus* (bracted twistflower) critical habitats are located. Travis, Bexar, Medina, and Uvalde Counties, Texas.
Conservation areas or properties with critical habitats
Miles
0 10 20 30 40 50
Kilometers
0 10 20 30 40 50
1:1,000,000
Streptanthus bracteatus
Critical Habitat Locator Map
Texas
1b. Bull Creek
1c. Mt. Bonnell
1d. Ullrich
1a. Barton Creek
Travis
Hays
Comal
Bandera
2c. Laurel Canyon
2a. Eisenhower
2b. Rancho Diana
2d. Medina River
3. Garner State Park
Uvalde
Medina
Bexar
N

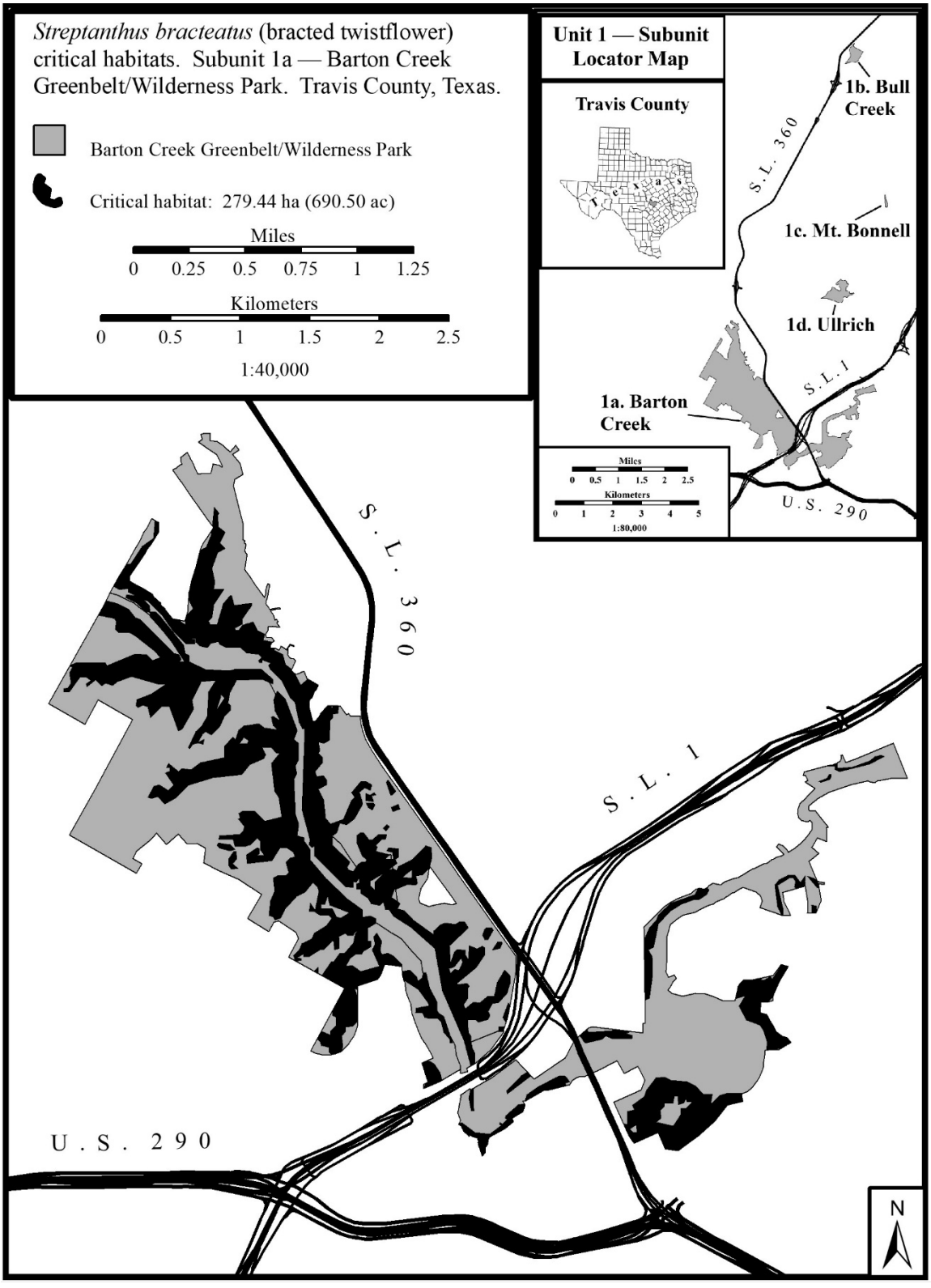
(6) Unit 1: Northeast; Travis County, Texas.

(i) Subunit 1a: Barton Creek Greenbelt and Barton Creek Wilderness Park.

(A) Subunit 1a consists of 690.5 acres (ac) (279.44 hectares (ha)) in Travis County and is composed of lands along Barton Creek owned by the City of Austin Parks and Recreation Department and jointly managed by the Parks and Recreation Department and Austin Water's Wildland Conservation Division as a unit of the Balcones Canyonlands Preserve (BCP) system.

(B) Map of Subunit 1a follows:

Figure 2 to *Streptanthus bracteatus* (bracted twistflower) paragraph (6)(i)(B)

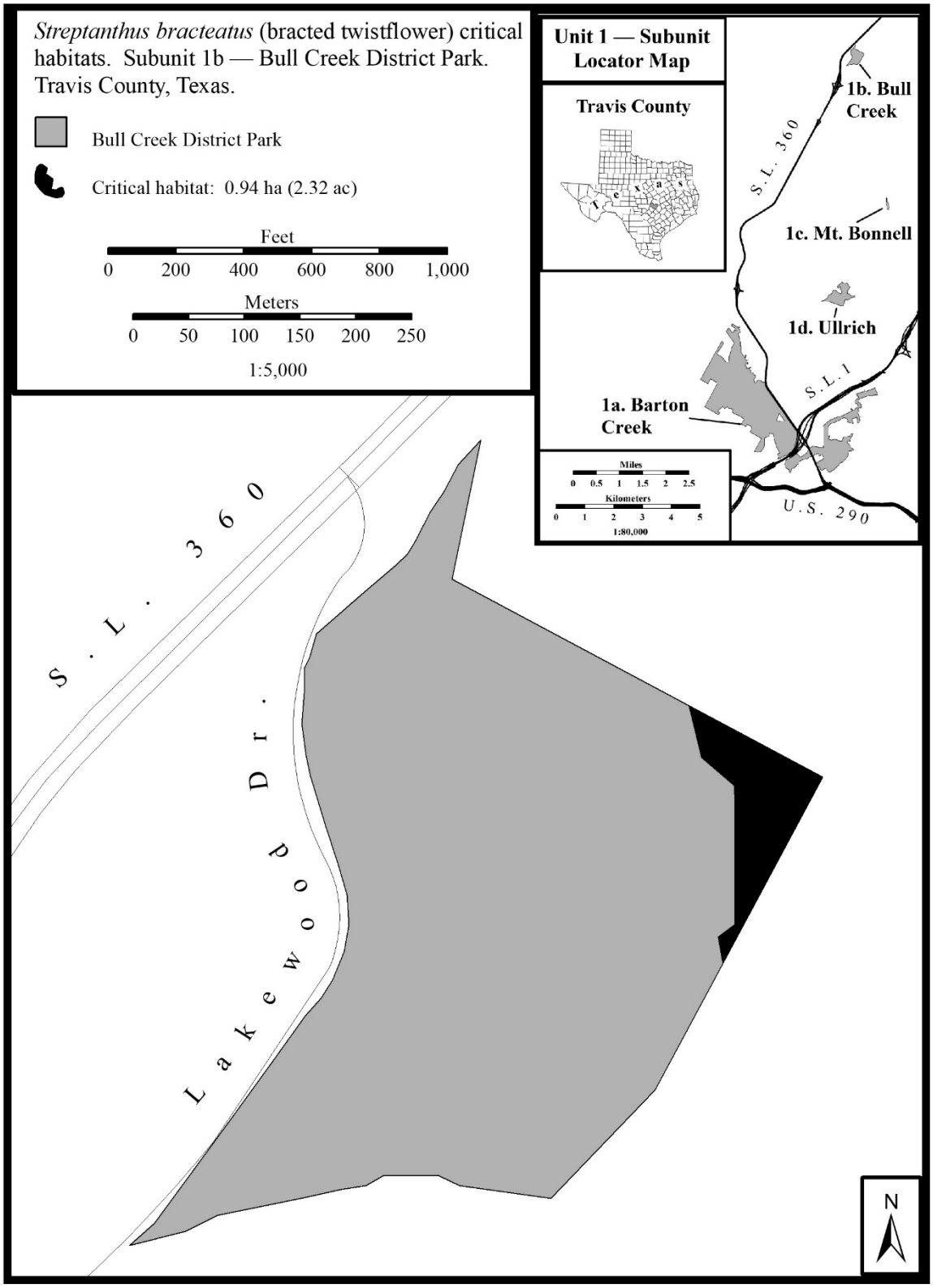

Streptanthus bracteatus (bracted twistflower) critical habitats. Subunit 1a — Barton Creek Greenbelt/Wilderness Park. Travis County, Texas.
Barton Creek Greenbelt/Wilderness Park
Critical habitat: 279.44 ha (690.50 ac)
Miles
0 0.25 0.5 0.75 1 1.25
Kilometers
0 0.5 1 1.5 2 2.5
1:40,000
Unit 1 — Subunit Locator Map
Travis County
1b. Bull Creek
1c. Mt. Bonnell
1d. Ullrich
1a. Barton Creek
S.L. 360
S.L.1
U.S. 290
Miles
0 0.5 1 1.5 2 2.5
Kilometers
0 1 2 3 4 5
1:80,000
S . L . 3 6 0
S . L . 1
U . S . 2 9 0
N

(ii) Subunit 1b: Bull Creek District Park.

(A) Subunit 1b consists of 2.32 ac (0.94 ha) in Travis County and is composed of lands owned by the City of Austin Parks and Recreation Department and jointly managed by the Parks and Recreation Department and Austin Water's Wildland Conservation Division as a unit of the BCP system.

(B) Map of Subunit 1b follows:

Figure 3 to *Streptanthus bracteatus* (bracted twistflower) paragraph (6)(ii)(B)

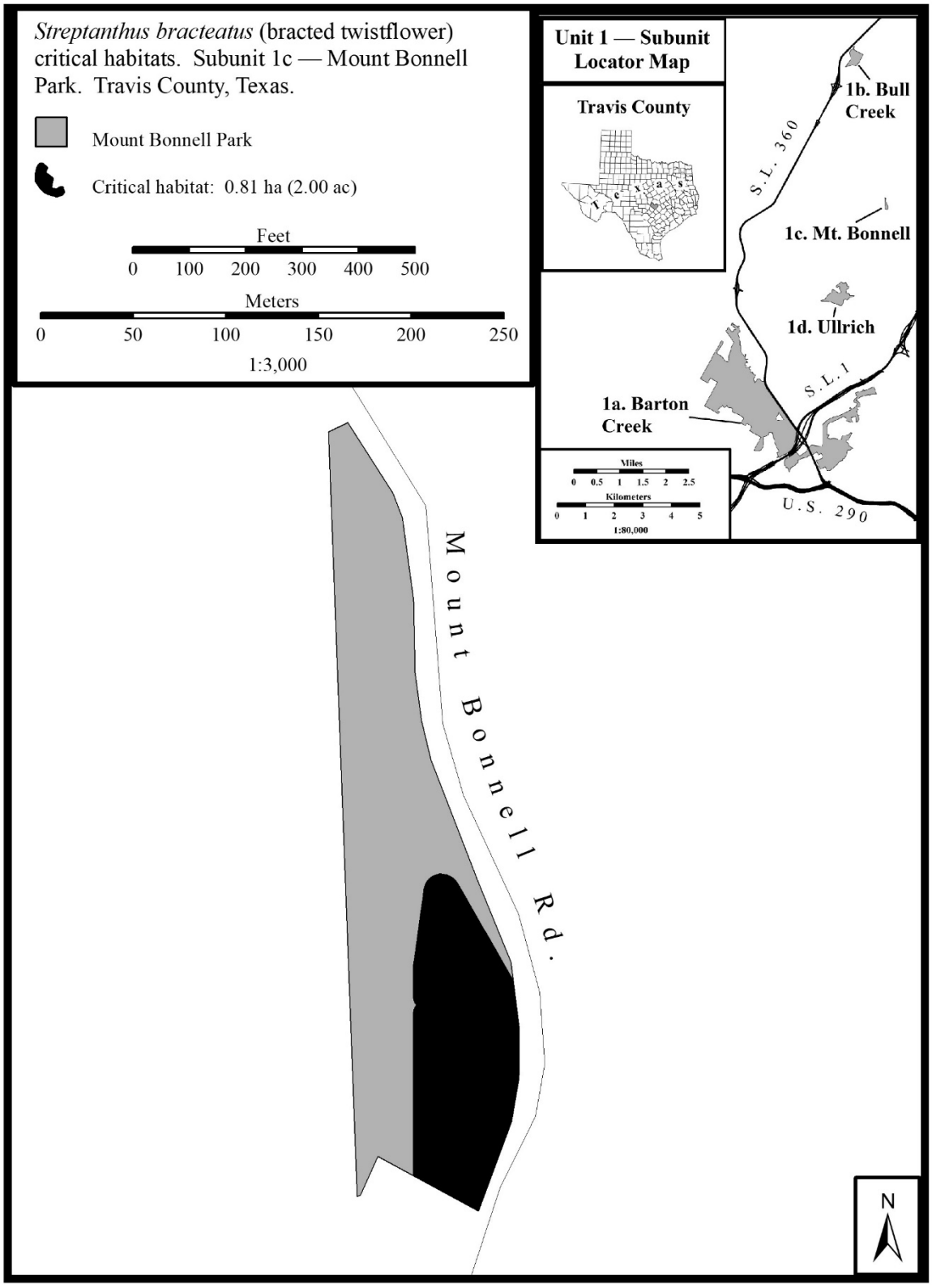

Streptanthus bracteatus (bracted twistflower) critical habitats. Subunit 1b — Bull Creek District Park. Travis County, Texas.
Bull Creek District Park
Critical habitat: 0.94 ha (2.32 ac)
Feet
0 200 400 600 800 1,000
Meters
0 50 100 150 200 250
1:5,000
Unit 1 — Subunit Locator Map
Travis County
Texas
1b. Bull Creek
S.L. 360
1c. Mt. Bonnell
1d. Ullrich
S.L.1
1a. Barton Creek
U.S. 290
Miles
0 0.5 1 1.5 2 2.5
Kilometers
0 1 2 3 4 5
1:80,000
S.L. 360
Lakewood Dr.
N

(iii) Subunit 1c: Mount Bonnell Park.

(A) Subunit 1c consists of 2 ac (0.81 ha) in Travis County and is composed of lands owned by the City of Austin Parks and Recreation Department and jointly managed by the Parks and Recreation Department and Austin Water's Wildland Conservation Division as a unit of the BCP system.

(B) Map of Subunit 1c follows:

Figure 4 to *Streptanthus bracteatus* (bracted twistflower) paragraph (6)(iii)(B)



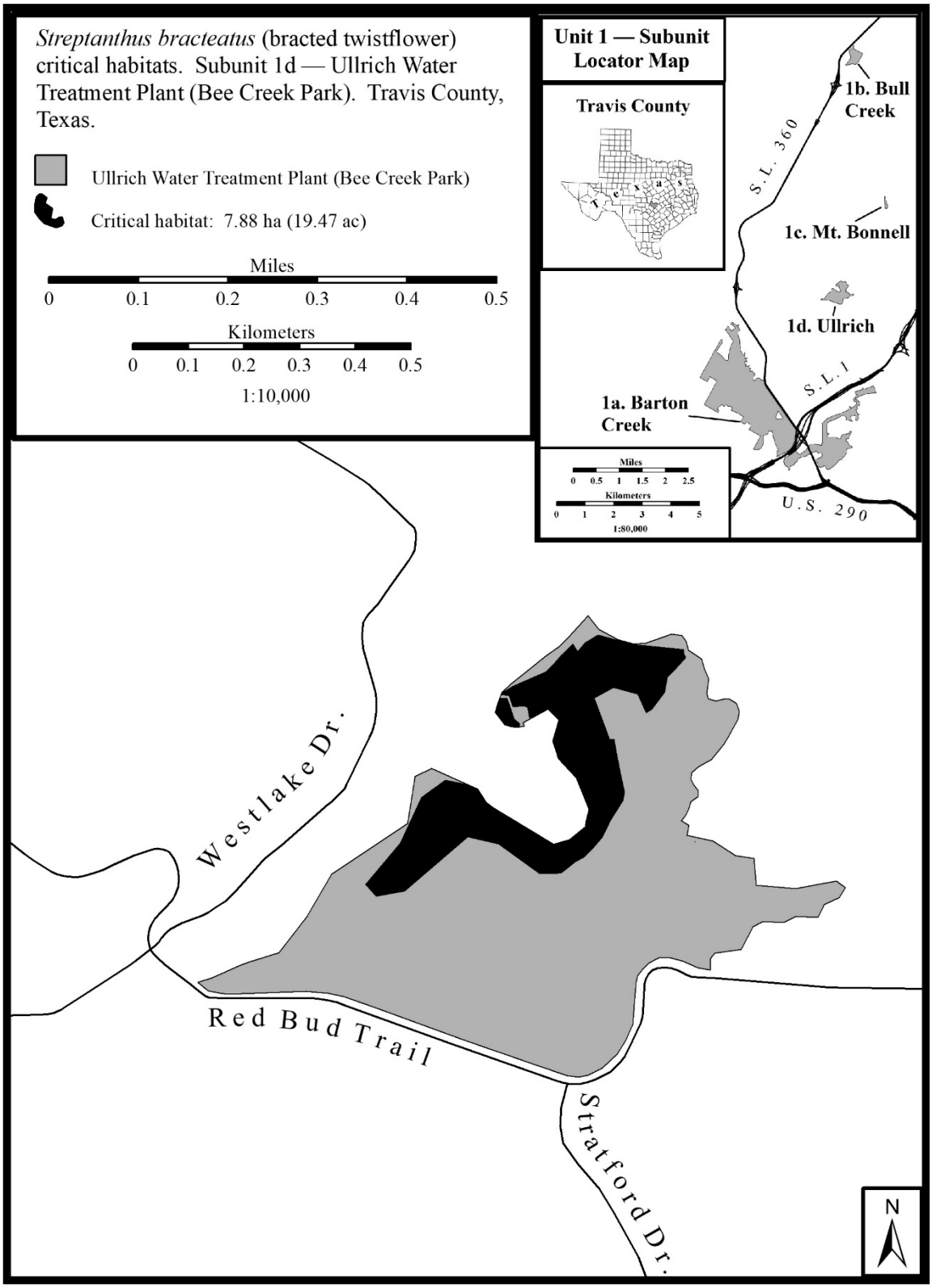
(iv) Subunit 1d: Ullrich Water Treatment Plant/Bee Creek Park.

(A) Subunit 1d consists of 19.47 ac (7.88 ha) in Travis County and is composed of lands owned by the City of Austin Water Utility, a portion of which is jointly managed

by the Parks and Recreation Department and Austin Water's Wildland Conservation Division as a unit of the BCP system.

(B) Map of Subunit 1d follows:

Figure 5 to *Streptanthus bracteatus* (bracted twistflower) paragraph (6)(iv)(B)



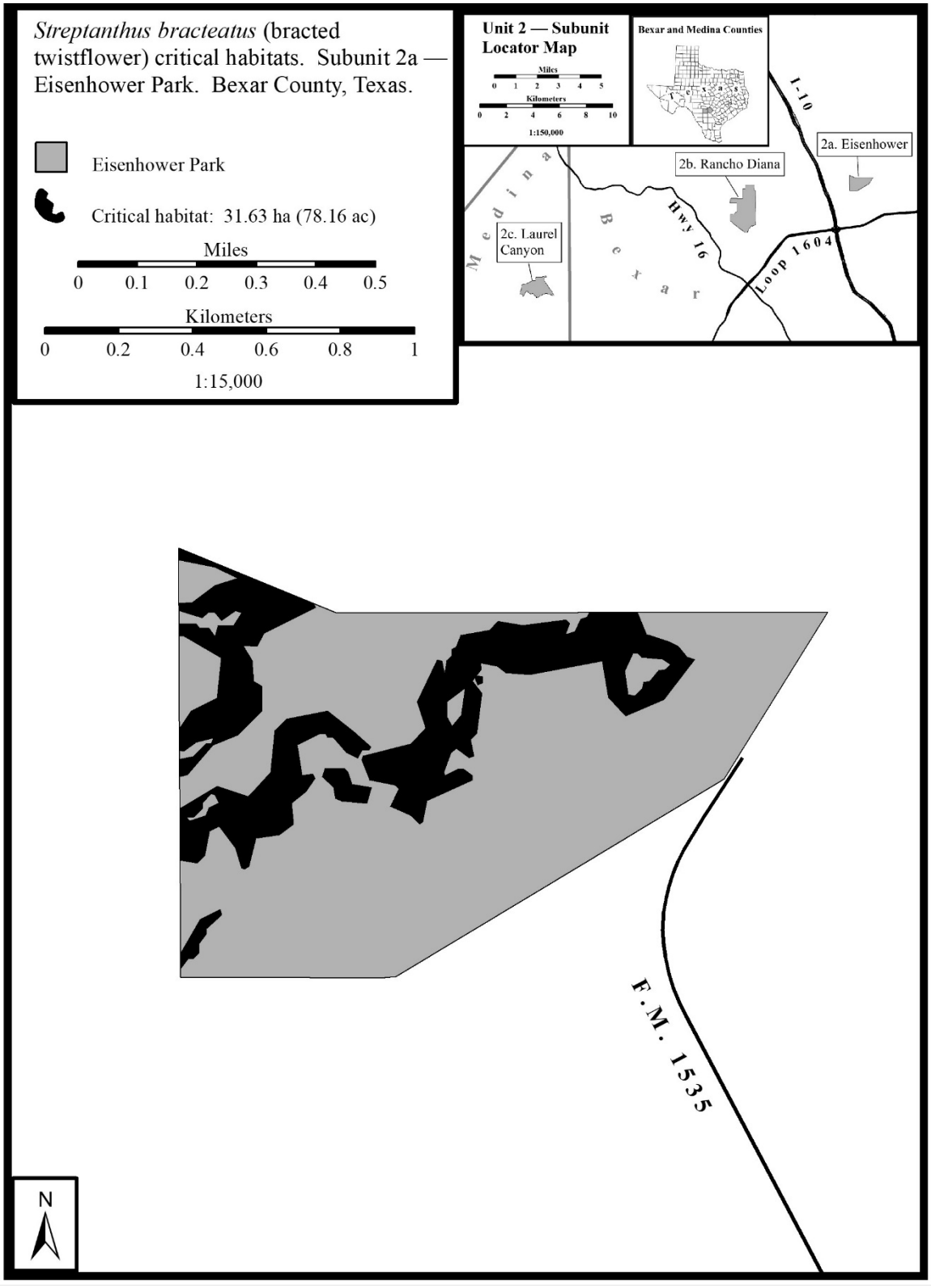
(7) Unit 2: Central; Bexar and Medina Counties, Texas.

(i) Subunit 2a: Eisenhower Park.

(A) Subunit 2a consists of 78.16 ac (31.63 ha) in Bexar County and is composed of lands owned by the City of San Antonio and managed by San Antonio Parks and Recreation Department.

(B) Map of Subunit 2a follows:

Figure 6 to *Streptanthus bracteatus* (bracted twistflower) paragraph (7)(i)(B)

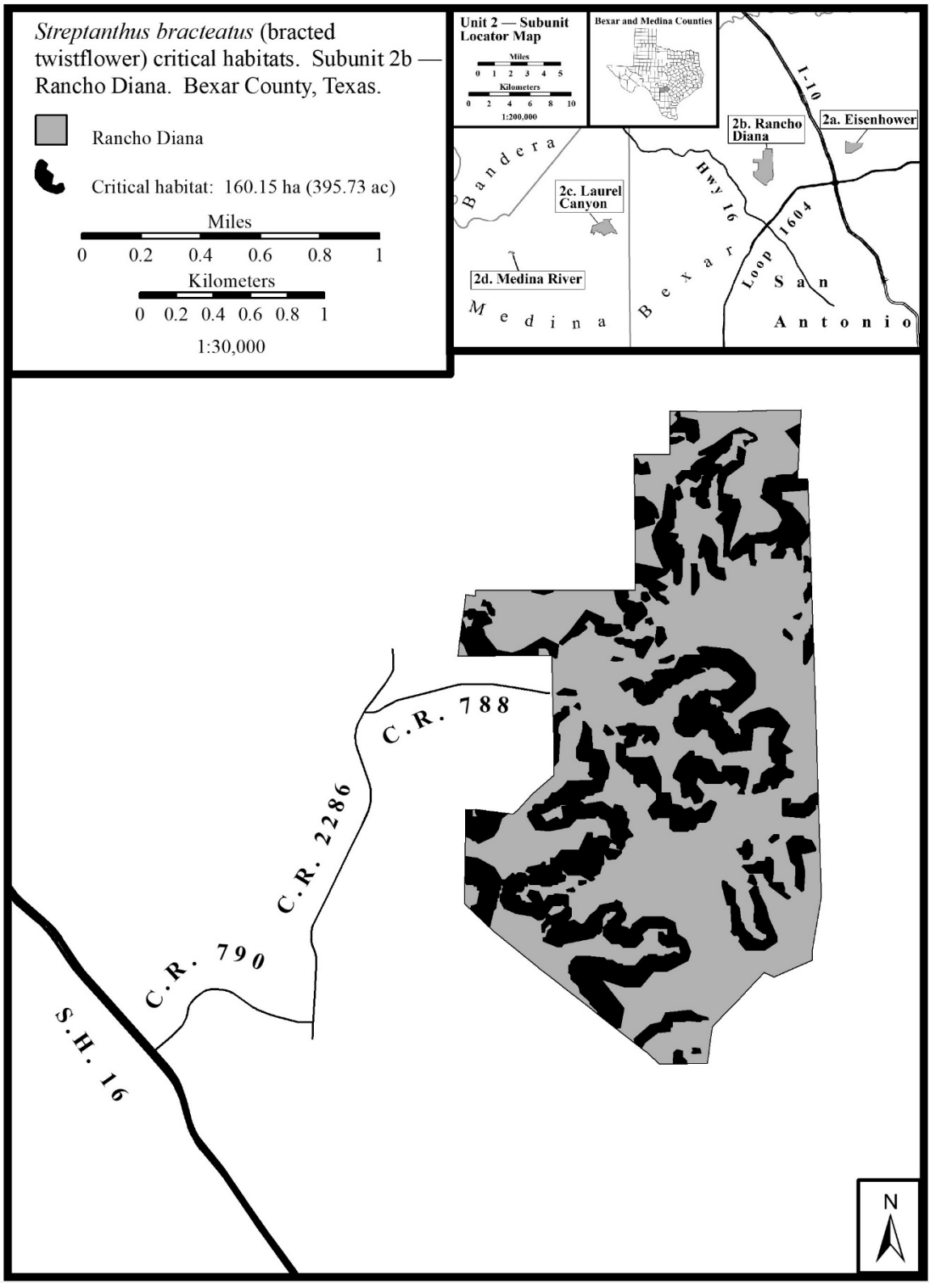


(ii) Subunit 2b: Rancho Diana.

(A) Subunit 2b consists of 395.73 ac (160.15 ha) in Bexar County and is composed of lands owned and managed by the City of San Antonio.

(B) Map of Subunit 2b follows:

Figure 7 to *Streptanthus bracteatus* (bracted twistflower) paragraph (7)(ii)(B)



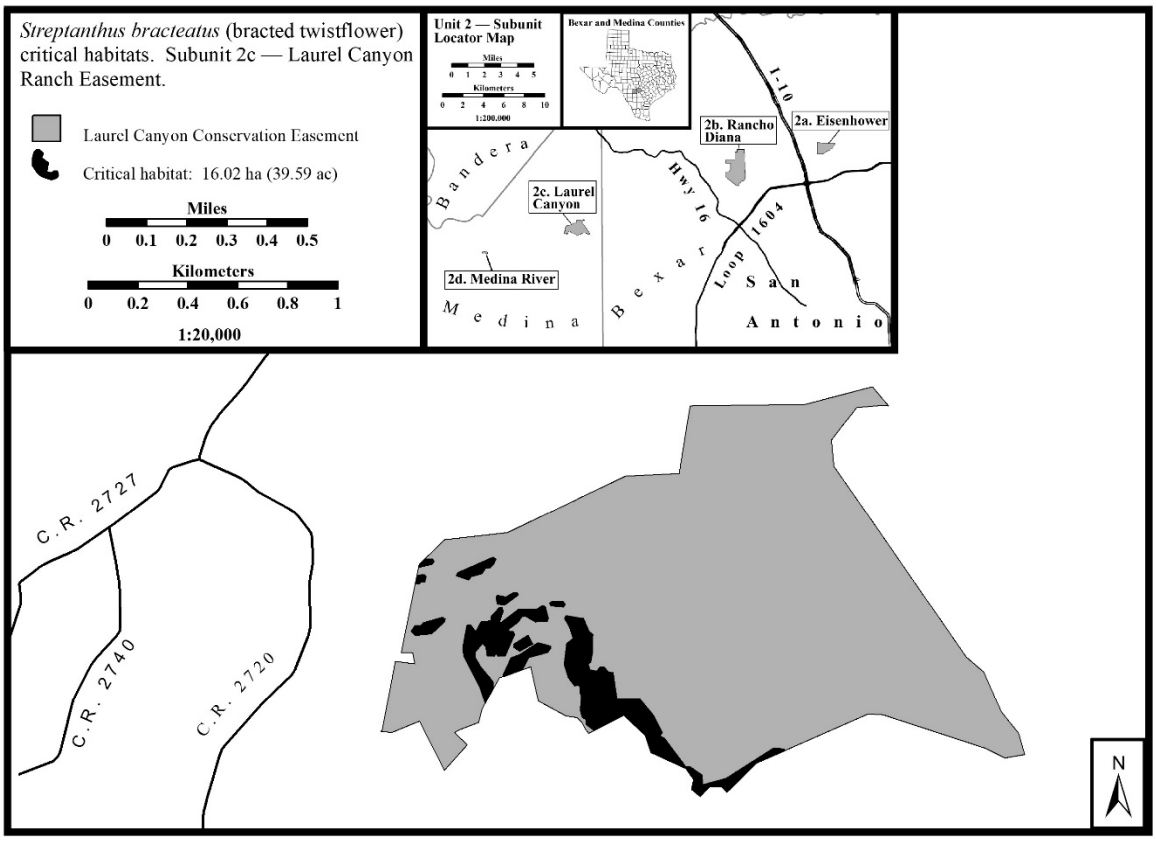
(iii) Subunit 2c: Laurel Canyon Ranch Easement.

(A) Subunit 2c consists of 39.59 ac (16.02 ha) in Medina County and is composed of private property owned by Laurel C. Canyon Ranch, LP. The City of San Antonio

Edwards Aquifer Protection Program holds a conservation easement on 222 ha (549 ac) of Laurel Canyon Ranch.

(B) Map of Subunit 2c follows:

Figure 8 to *Streptanthus bracteatus* (bracted twistflower) paragraph (7)(iii)(B)

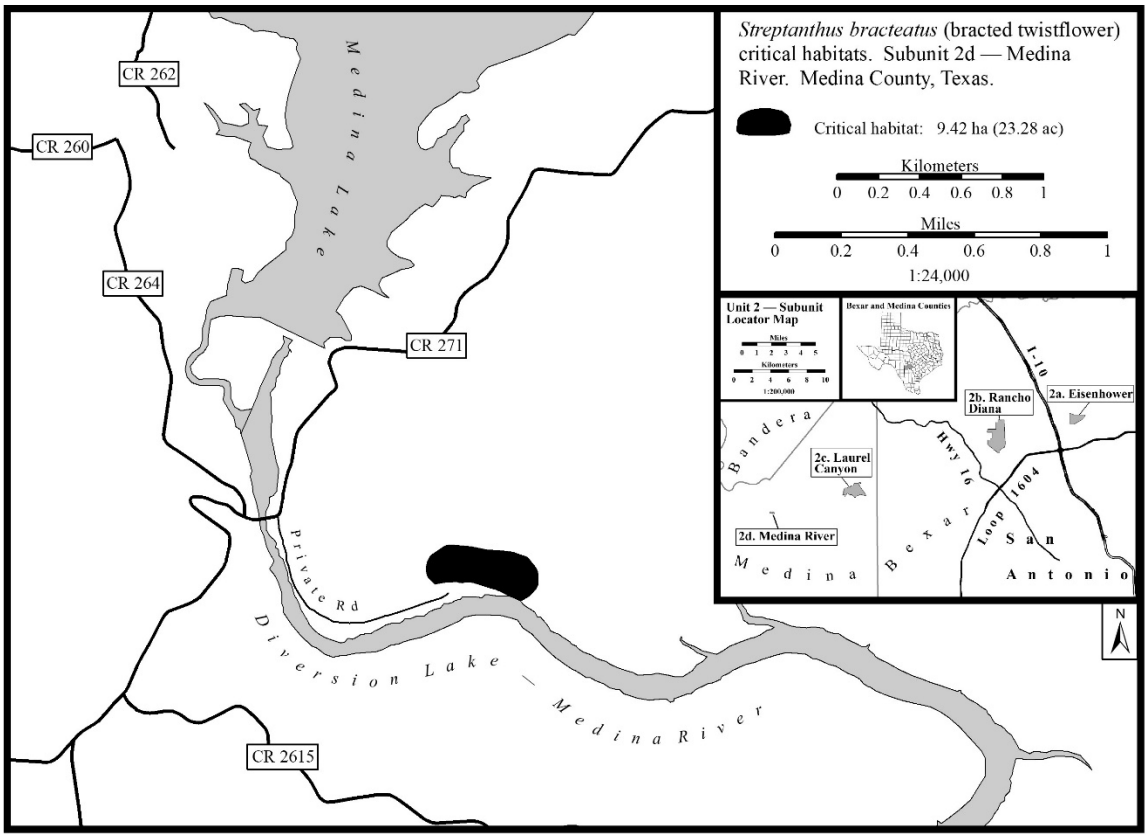

Streptanthus bracteatus (bracted twistflower) critical habitats. Subunit 2c — Laurel Canyon Ranch Easement.
Laurel Canyon Conservation Easement
Critical habitat: 16.02 ha (39.59 ac)
Miles
0 0.1 0.2 0.3 0.4 0.5
Kilometers
0 0.2 0.4 0.6 0.8 1
1:20,000
Unit 2 — Subunit Locator Map
Miles
0 1 2 3 4 5
Kilometers
0 2 4 6 8 10
1:200,000
Bexar and Medina Counties
I-10
2b. Rancho Diana
2a. Eisenhower
Bandera
2c. Laurel Canyon
Hwy 16
Loop 1604
2d. Medina River
Medina
Bexar
San Antonio
C.R. 2727
C.R. 2740
C.R. 2720
N

(iv) Subunit 2d: Medina River.

(A) Subunit 2d consists of 23.28 ac (9.42 ha) in Medina County and is composed of private property owned by Medina Ranch Inc.

(B) Map of Subunit 2d follows:

Figure 9 to *Streptanthus bracteatus* (bracted twistflower) paragraph (7)(iv)(B)

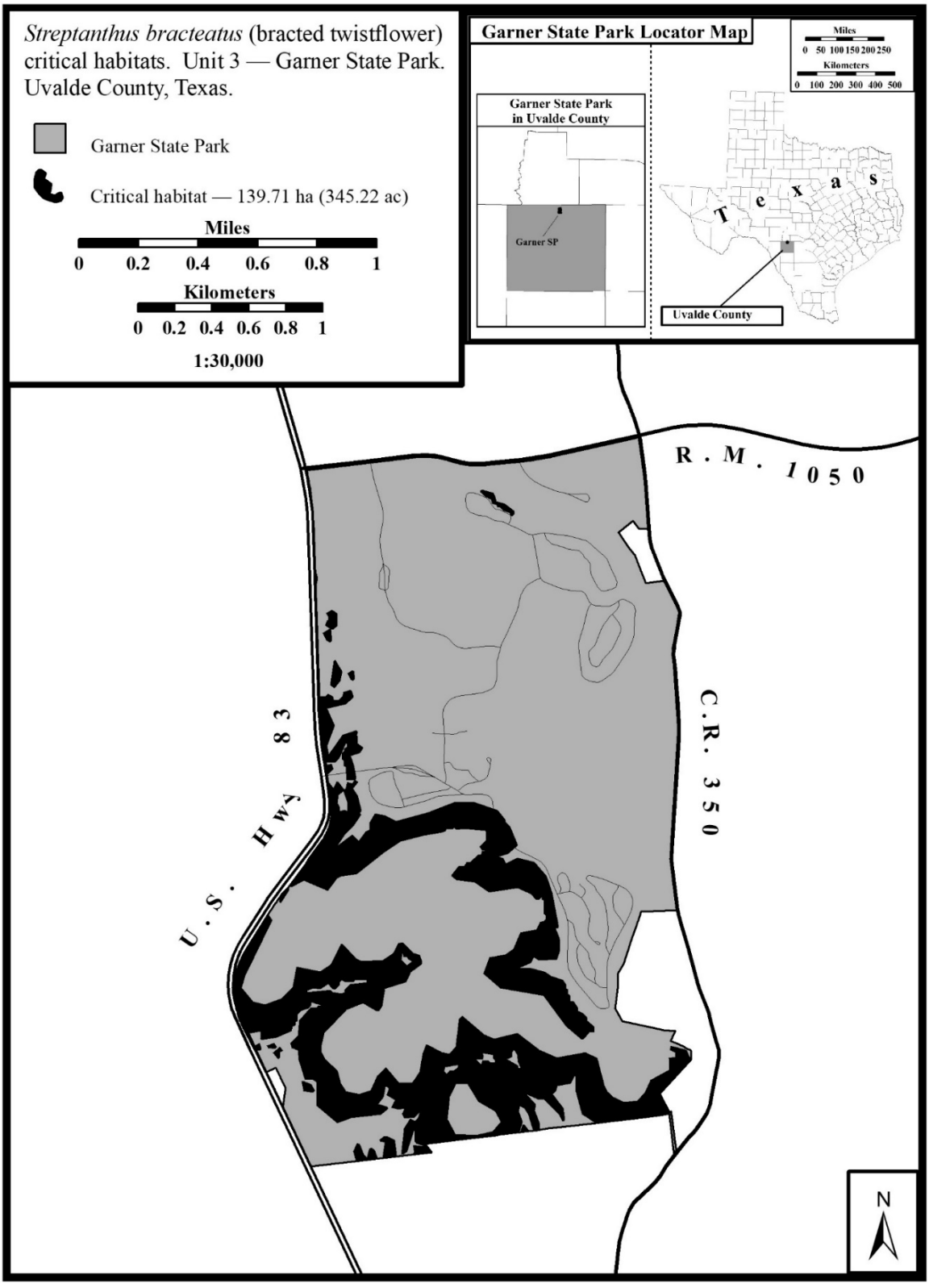

Streptanthus bracteatus (bracted twistflower) critical habitats. Subunit 2d — Medina River. Medina County, Texas.
Critical habitat: 9.42 ha (23.28 ac)
Kilometers
0 0.2 0.4 0.6 0.8 1
Miles
0 0.2 0.4 0.6 0.8 1
1:24,000
Unit 2 — Subunit Locator Map
Miles
0 1 2 3 4 5
Kilometers
0 2 4 6 8 10
1:200,000
Bexar and Medina Counties
I-10
2b. Rancho Diana
2a. Eisenhower
Bandera
2c. Laurel Canyon
Hwy 16
Loop 1604
2d. Medina River
Medina
Bexar
San Antonio
N
Medina Lake
CR 262
CR 260
CR 264
CR 271
Private Rd
Diversion Lake — Medina River
CR 2615

(8) Unit 3: Southwest; Garner State Park, Uvalde County, Texas.

(i) Unit 3 consists of 345.22 ac (139.71 ha) in Uvalde County and is composed of lands within Garner State Park, which is managed by Texas Parks and Wildlife Department.

(ii) Map of Unit 3 follows:

Figure 10 to *Streptanthus bracteatus* (bracted twistflower) paragraph (8)(ii)


Streptanthus bracteatus (bracted twistflower) critical habitats. Unit 3 — Garner State Park. Uvalde County, Texas.
Garner State Park
Critical habitat — 139.71 ha (345.22 ac)
Miles
0 0.2 0.4 0.6 0.8 1
Kilometers
0 0.2 0.4 0.6 0.8 1
1:30,000
Garner State Park Locator Map
Miles
0 50 100 150 200 250
Kilometers
0 100 200 300 400 500
Garner State Park in Uvalde County
Garner SP
Texas
Uvalde County
R. M. 1050
U. S. Hwy 83
C.R. 350
N

* * * * *

Martha Williams,
Director,
U.S. Fish and Wildlife Service.

[FR Doc. 2023-07118 Filed: 4/10/2023 8:45 am; Publication Date: 4/11/2023]